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State of New Jersey.

TWELFTH ANNUAL REPORT

OF THE

New Jersey Board of Agriculture.

1884.



1885.

PRINTED BY ORDER OF THE LEGISLATURE.

TRENTON, N. J.:
JOHN L. MURPHY, STATE PRINTER.

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STATE BOARD OF AGRICULTURE, 1885.

PRESIDENT.

HON. THOS. H. DUDLEY.....CAMDEN.....Camden County.

VICE-PRESIDENT.

THOS. T. KINNEY.....NEWARK.....Essex County.

TREASURER.

WILLIAM S. TAYLOR.....BURLINGTON.....Burlington County.

SECRETARY.

P. T. QUINN.....NEWARK.....Essex County.

EXECUTIVE COMMITTEE.

EDWARD BURROUGH..MERCHANTVILLE.....Camden County.

D. D. DENISE.....FREEHOLD..... Monmouth County.

PROF. GEO. H. COOK.....NEW BRUNSWICK.....Middlesex County.

To the General Assembly of New Jersey:

In accordance with the provisions of the act creating a State Board of Agriculture, adopted April 22d, 1884, I have the honor to present the annual report for 1884-85.

P. T. QUINN,
Secretary.

NEWARK, Essex County, February 15th, 1885.

STATE BOARD OF AGRICULTURE.

TWELFTH ANNUAL MEETING.

SUPREME COURT ROOM, }
TRENTON, February 3d, 1885. }

The twelfth annual meeting of the Board of Agriculture was held in the Supreme Court Chambers, at the State House, in Trenton, on Tuesday and Wednesday, February 3d and 4th, 1885.

On Tuesday morning, the 3d inst., at 10:25 o'clock, the meeting was called to order by the President, Hon. Thomas H. Dudley.

The programme prepared by the Executive Committee for the two days' session of the meeting was read by the Secretary, and adopted. The following is a copy of the same:

PROGRAMME.

TUESDAY, February 3d.

MORNING SESSION.

10 o'clock.—Meeting called to order by the President, Hon. Thomas H. Dudley, of Camden county.

Reading report of the Executive Committee.

11 o'clock.—Appointment of a Committee on Credentials, to report at the afternoon session.

Appointment of a Committee to Nominate Officers and Executive Committee for the ensuing year.

12 o'clock.—Reports of State and County Boards who have delegates present.

12:45 o'clock.—Report of the Committees appointed at last annual meeting.

AFTERNOON SESSION.

2:30 o'clock.—Report of the Committee on Credentials.

2:45 o'clock.—President's Address.

3:30 o'clock.—"Insects Injurious to Vegetation," by Prof. Chas. V. Riley,
United States Entomologist.

Discussion on the same.

5 o'clock.—“Cultivation of Tobacco,” by Col. James Duffy, of Lancaster county, Pa.

Discussion on the same.

EVENING SESSION.

8 o'clock.—Lecture on Agriculture, by ex-Governor Andrew G. Curtin, of Pennsylvania.

WEDNESDAY, February 4th.

MORNING SESSION.

10 o'clock.—“Diseases of Animals,” by Dr. D. E. Salmon, of Washington, D. C., and Dr. W. B. E. Miller, of Camden county.

11:30 o'clock.—Essay on “The Farmers of New Jersey,” by Amos Ebert, of Kirkwood.

12:30 o'clock.—Report of the Nominating Committee and Election of officers.

AFTERNOON SESSION.

2 o'clock.—Essay on “Market Gardening,” by Theo. F. Baker, of Cumberland county.

3 o'clock.—Fertilizers, by Prof. George H. Cook, of New Brunswick.
Discussion on the same.

4 o'clock.—Essay, “Raising Poultry with Incubators and Brooders,” by Chas. Lippencott, of Burlington county.

Discussion on the same.

4:30 o'clock.—Miscellaneous business in closing the session.

The annual report of the Executive Committee was read at this point, by the Secretary, and on motion it was unanimously adopted as read. The report is as follows :

EXECUTIVE COMMITTEE'S ANNUAL REPORT.

Gentlemen of the State Board of Agriculture :

Another year with its usual routine of trials and triumphs, profits and losses, encouragements and discouragements, has elapsed since we last assembled in this hall, in annual session, and although we are again compelled to chronicle a continuance of the low prices of last year, for most staple crops, the prices of early vegetable and fruit crops have been remunerative, and many instances have been brought to the attention of the Executive Committee where intelligent culti-

vation and manuring, coupled with watchful energy, have produced large and profitable returns to the husbandman. The prices of live stock have been satisfactory, and fair returns realized on investments in these divisions of agriculture. The weather during the Spring months and until Midsummer was favorable for growing-crops, and yields are fully up to the average for early products, while the prolonged drought of the late Summer and Autumn months greatly retarded late vegetation and reduced the yield of most crops. Corn was sufficiently advanced prior to the drought to escape serious damage; the dry Autumn weather favored its maturing, and the result is, if not the largest, it is the best matured crop of corn harvested for many years.

Immediately after our last session, the committee bent its energies to secure a larger number of copies of the annual report. In this they were successful, receiving an increase of 2,000 copies. Owing to vexatious delays the report was not issued until April, hence the lateness of its distribution. The Committee on Legislation were active in preparing the recommendations referred to them for legislation, and in due time the bills re-organizing the State Board of Agriculture, increasing the efficiency of the Experiment Station, and amending the milk law so as to secure the right of trial by jury, were severally presented to the Legislature, and passed with scarcely a dissenting vote, and are now, all of them, laws in active operation.

Under the provisions of the new law regulating the State Board of Agriculture, it became the duty of the Executive Committee to assist and encourage the formation of County Boards of Agriculture in the several counties of the State, and to this end some member of the committee has been in attendance at the annual meetings of these Boards whenever sufficient notice has been given to enable them to be present. In every instance that has come under our notice, we have found continued evidence of the usefulness of the Boards and their efficiency as important adjuncts to the State Board to enable it to accomplish its purpose of effecting a systematic organization for the advancement of the agriculture and horticulture of the State, and place it in the position its dignity and importance so justly entitle it to maintain. We therefore earnestly impress upon those now in attendance from counties that are not yet represented through a County Board, to take the necessary steps to effect such an organization in their respective counties at as early a day as possible.

The time of the individual members of the Executive Committee during the past few months has been largely taken up in preparing an exhibit of the cereal products of our State for the World's Exposition at New Orleans. The lateness of the appointment and the limited time allotted for its collection and shipment, necessarily prevented us from securing samples from all the counties in the State, although notice through the newspapers and by circulars were duly given and individual contributions solicited; we were, however, successful in getting creditable samples of nearly all varieties of grains, grasses and nuts grown in the State, except acorns, the crop of which proved to be an entire failure. Our collection will embrace over 200 jars, similar to the one presented for your inspection, besides displays of grain in the sheaf, corn on the stalk and in the ear, and a large collection of photographic views of farm-homes and farm views, which will be shown collectively in large frames.

We cannot close this report without recognizing the efficient services of Messrs. Ward and Baird, of the State Horticultural Society, through whose energy the horticultural interests were represented, and who also included the vegetable exhibit in their collection, thus completing the agricultural exhibit of the State.

In the discharge of these duties the Executive Committee are pleased to acknowledge the uniform courtesy, confidence and interest extended to them by Gen. C. H. Barney, the State Commissioner, through whose influence and foresight the State will be creditably represented in the great Exposition. To General Barney is due the recognition of the State Board of Agriculture, and at his solicitation a roster of the officers of the Board has been engrossed and displayed among the agricultural exhibits, thus placing the State Board in the position it was designed to occupy, the recognized head of the agricultural interest of the State. During the collecting of this exhibit, the efficiency of the County Boards of Agriculture became apparent from the manner in which the Mercer County Board collected and delivered an excellent collection of the products of their county. Had they consulted the Commissioners, they would have been saved much unnecessary trouble, thus practically demonstrating the utility of a harmonious organization throughout the State.

Notwithstanding our familiarity with the products and capacity of our soil, we were, nevertheless, surprised at the size and quality of many of the samples, and are more firmly convinced that in the near

future what is now considered to be our maximum average of yield of crops will be reduced to the minimum.

The Executive Committee are pleased to note an increased interest in the horticultural industry of the State, which is clearly manifested by the large attendance and increased membership of the State Horticultural Society, and the desire of farmers generally to obtain a knowledge of horticultural subjects; it is a poor farmer that refuses to provide liberally of fruits for his family and flowers for the adornment of his home. The reports of this society are full of instructive points, both to the professional and amateur, and we recommend them to your favor. The location of our State, the character and adaptability of our soil and proximity to markets, thus avoiding long delays in transportation, render it particularly favorable to the cultivation of fruits and flowers in all their varieties; much of the hitherto unproductive soil in the southern sections of the State are found to produce splendid crops of fruits and berries, as will more fully appear in the reports from the counties in that section. With these indisputable facts placed so intelligently before them, the legislators of our State will be justified in extending a helping hand to institutions of this character.

Among the questions that the Executive Committee has been requested to call your attention to, those seemingly of the most importance are the depredations of the English sparrow and the acts of trespass now indulged in by hunters with dog and gun, and would recommend such action as in your judgment their importance deserve.

In accordance with the act of the Legislature, re-organizing the State Board of Agriculture, we have assigned the term of delegates from the different counties as follows, viz.: Delegates from Atlantic, Burlington, Cape May, Essex, Hudson, Mercer, Morris, Ocean, Salem, Sussex and Union counties for the term of one year; those from Bergen, Camden, Cumberland, Gloucester, Hunterdon, Middlesex, Monmouth, Passaic, Somerset and Warren, for the full term of two years.

By referring to the law it will be ascertained that such assignments are necessary in order to have one-half the delegates elected yearly, and in counties electing under this apportionment the terms of delegates will be for the full term of two years.

We flatter ourselves in presenting the annual programme, that it will meet your approval, and earnestly desire that you will avail

yourselves of the opportunity presented to ask such questions of a practical application as will tend to bring forth additional information on these subjects. We also direct your attention to the reports from the different County Boards and other societies that may be presented, and especially to any suggestions or recommendations of general importance that may be offered for your consideration; and all present who are interested in these subjects are cordially invited to participate in their discussion.

WILLIAM S. TAYLOR,
Chairman.

The Chair remarked that this report was one of more than ordinary importance, and one of the greatest interest to this State.

He also said: In this connection I would state that there is probably no other State with so much waste land as the little State of New Jersey. This land was apparently irreclaimable, in the opinions of the majority of people, and it is only lately that our people are beginning to find out the value of some portions of it.

In the southern portion of the State, small fruits, especially strawberries, are beginning to be raised in large quantities on this land which has been heretofore considered of no value whatever.

Small vegetables and garden products are also beginning to be raised where formerly nothing grew.

I trust the attention of farmers may soon be called to these facts, and that they may begin to realize the immense amount of waste land now lying idle in the southern portions of our State.

There is a town or village called Hammonton, about thirty miles below Philadelphia, which, but a few years since, was nothing but a barren place. There was nothing there but sand—white sand—nothing at all growing, not even a blade of grass.

This land has much of it been taken up, and by judicious management, putting on a little muck and some fertilizers, they have succeeded in raising the very finest small fruits, especially strawberries, not only in small quantities, but by the bushel—yes, by the tons. Why, no less than four car-loads of strawberries alone have been shipped from there in a single day, besides large quantities of other fruit and produce in season.

I merely mention this fact as an illustration of what may be done

with this land. This will show to what extent this cultivation may be brought in the southern parts of our State.

The members of this association should, in my judgment, take some more effective steps than have yet been taken towards securing more power to the members as a body. As their powers are now, they are entirely too contracted and narrow. The association, in order to be useful, should bring in a larger number of the farmers of our State than are now with us. I hope steps will be taken at this meeting, before we think of adjourning, towards securing some proper and effective legislation to give the association a wider and larger scope than it now has.

The Chair.—There is a gentleman here who has just returned from a visit to the New Orleans Exposition. The report of the Executive Committee calls your attention to the very creditable exhibit sent from this city for the State Exhibit of New Jersey.

I have no doubt the gentleman referred to will be able to give you some very pleasing information in regard to it, as well as in regard to other points of interest in connection with the Exposition at New Orleans, and also with the journey between here and that place. I call upon Judge Parry, of Cinna^min^son, N. J., to give us some account of the New Orleans Exposition.

Judge Parry.—Before going to the New Orleans Exposition, I must say I was somewhat prejudiced as to the character of the institution. It was represented to me, in fact, as being of no account whatever, and very much below the average of such exhibitions.

When we arrived there, I am glad to say that we found everything beyond our expectations, and, though the exhibits were not all placed, I found them making rapid progress, and before I left there I had changed my mind and could not but pronounce it a very grand and important affair. I have prepared a short paper, which I will read, giving my experience. [This paper will be found in the body of this report.]

In connection with his remarks on the placing of the New Jersey State exhibit, he said: There is a great deal in properly placing an exhibit of this kind so that it may be seen by every one, without their having to hunt for it. New Jersey had three large signs so conspicuously placed that every one could read them and see where our exhibit was, if they came anywhere near it. No one could come anywhere near it.

without being likely to notice it. With many of the other exhibits you had either to ask where they were or not see them at all.

Referring to the exhibit of small fruits at the New Orleans Exposition, he remarked: At the Centennial Exposition at Philadelphia, I happened to be one of the judges appointed to pass on the fruit exhibit. I think we had over 10,000 plates to go over there. That seemed very heavy to us, and it took us a whole week to go over them, yet at the New Orleans Exposition they have fully double the number they had at the Centennial Exposition of 1876.

I can say that it was very gratifying to me to see the really fine and creditable display made by the State of New Jersey, and, though the awards had not yet been made when I left there, I learn since that New Jersey is also very creditably represented there.

On motion, the paper was received and ordered printed in the annual report of the association.

The Chair.—I understand there is a resolution to be presented that an invitation be extended to each branch of the Legislature, now in session in the Capitol, to be present with us at our meetings, if possible.

The Secretary.—I move you, sir, that an invitation be presented to each branch of the Legislature, now in session in the Capitol, to attend our sessions.

Seconded, adopted and the invitations sent.

The Chair.—It is now in order to appoint the Committee on Credentials, the Committee on Nomination of Officers and an Executive Committee.

On motion, these two committees to be appointed by the Chair.

The Chair.—I will announce the committees after awhile. We will proceed to consider the reports of the delegates of the different State and County Boards, where delegates are present. Will the Secretary please call the different Boards of counties, &c., alphabetically?

STATE AGRICULTURAL SOCIETY.

Hon. T. H. Dudley.—I had expected Mr. Clark, the President of the Board, but he is not here. I have no special report to make, other than this, that the State Agricultural Society is in a most flourishing condition. The last exhibition that it held was a most success-

ful one—in fact the most successful exhibition it ever held, or was ever held in the State. This applies not only to the financial result, but to the exhibits also. The exhibits were more numerous in this exhibition than in any other we have ever held before.

I think some united effort should be made to extend the usefulness of this institution. I mean more especially in the support of the farming community by joining us and by exhibiting their farm products, as well as their cattle and horses and other products of the stable. If the people of this State would exhibit more largely it would be productive of much more good to them, and it is those throughout the agricultural districts whom it would benefit most.

Last year we enlarged the premiums, and I think they will be still more extended this season. Of course, I make this statement without any authority to do so, but I merely make the statement to you here to show you the advisability of more extended effort on your part.

STATE HORTICULTURAL SOCIETY.

Mr. J. D. Rogers.—Mr. Williams handed the minutes to me with the request that I should prepare them for publication. I received them from him only last Saturday.

The meeting of this year was largely attended, and the question discussed was that of "Peach Culture," from scientific and practical standpoints, together with the kinds of manures used, the modes of trimming, &c. The quince question was also discussed in all its bearings, referring more especially to growth and varieties. The strawberry question was also discussed, as was also that of potatoes, in regard to variety, yield, manures, &c.

Mr. Williams made an experiment with from thirteen to fifteen varieties of potatoes, in order to see which was the earliest.

He found the "Early Ohio" to be the earliest of those he experimented with. Many of the so-called "early" varieties turned out to be some ten days later than the "Early Ohio."

A friend of mine, a prominent horticulturist, has been attending the New Orleans Exposition. The gentleman I refer to is Mr. Ward.

He speaks very gratifyingly of the awards granted the New Jersey exhibits at the Exposition.

A letter appeared in the Newark papers some days since, stating that cards had been placed on the New Jersey State exhibits, and that

the results were very gratifying—that New Jersey need not be ashamed of her showing. Mr. Ward took the premium on ten varieties of pears. Mr. Parry had made four exhibits and had taken the premium on them. They were exhibited to the finest advantage of any fruit in the exhibit.

There will be an abstract prepared to go into the minutes of the Society (the State Board), but I beg the indulgence of the meeting to say a few words in regard to one or two points in the Executive Committee's report.

The first is in regard to the English sparrow.

If there is in this State one unmitigated nuisance, it is the English sparrow. They are becoming so troublesome that we ought to do something to protect ourselves. They are not an insectivorous bird, but destroy an immense quantity of small fruit.

Last year my currant bushes had to be covered to prevent their ravages. It is not only this, but they will go and pick off every bud from the fruit trees. I think this Board should take some united action towards abolishing this unmitigated nuisance.

The second point is in regard to trespassers on our land.

There appears to be no remedy for this. I think laws should be passed making every land owner his own constable and giving him powers to act as a constable whenever he finds any one trespassing on his lands. We are constantly being annoyed and injured by these trespassers, and, when we order them off, are likely to be insulted, or to have a pistol presented to our heads.

I can see but one way to stop these two nuisances, and that is "death to the English sparrows" and "imprisonment for trespassers."

These are the only remedies I can see for these two unmitigated nuisances, for one is just as bad as the other.

Judge Holcombe.—I agree with the gentleman who has just spoken, and think they are just as injurious to vegetation as they are to fruit. They are also making great depredations on our pea crop. They are the worst depredators we have, in fact. Nearly two years ago I had quite a large crop of them planted, and the sparrows were so bad that I told my son to go out and try to frighten them off with his gun. I did not want him to shoot any of them, but merely try and frighten them away by firing off the gun, but he, being a pretty good marksman, thought he would try his hand on them, and fired at them to kill. After he had killed two or three of them they went away, and

stayed away all that day, though the sound of the gun, before he killed any of them, had no effect on them at all.

I omitted one thing which I wished to say about the New Orleans Exposition—only a word. There was a letter published in the papers some days since saying that if New Jersey had done nothing else, she was entitled to the thanks of the whole United States for her exhibit of fruits kept in cold storage. The early fruits, after being exhibited at New Orleans eighteen days, with the temperature varying from seventy degrees to thirty-two degrees, were still in perfect condition.

It was also stated by a prominent pomologist that the exhibit of the State of New Jersey to this Exposition would give a great impetus to the method of keeping fruits by "cold storage."

THE NEW JERSEY AND AMERICAN CRANBERRY GROWERS'
ASSOCIATION.

Rev. J. H. Brakeley.—The report of our last meeting is in the hands of the printer, and also at the service of our Secretary, when wanted. As soon as printed, I will have a copy forwarded to the Secretary for publication in the report.

STATE GRANGE, PATRONS OF HUSBANDRY.

Mr. Cole.—I would merely state that, as I am not a member, I have brought nothing with me. I would state that the State Grange of New Jersey is doing a good work for the agriculturists of the State, and for agriculturists in general.

NEW JERSEY BEE KEEPERS' ASSOCIATION.

Mr. J. H. Cook.—I am glad to state that the Society is a successful one, and that it is doing a good work for the bee keepers of the State, helping them in many ways.

I will hand you a written report, giving the officers, &c., in a few days.

The Chair.—We would like to have the report as full as possible, giving figures and a detailed statement of the work performed.

Mr. Cook.—The reports have not been handed in regularly as to the statistics, in regard to money made on bees, &c.

The Chair.—You can perhaps give us a general statement, approximately giving the figures as nearly as possible.

Mr. Cook.—Our figures are not handed in regularly enough to give you any reliable statement.

The Chair.—Can you give us the amount of honey produced by your bees?

Mr. Cook.—We cannot tell you how much honey was produced in the State.

ATLANTIC COUNTY BOARD OF AGRICULTURE.

No delegate present.

EGG HARBOR CITY BOARD OF AGRICULTURE.

No delegate present.

BURLINGTON COUNTY BOARD OF AGRICULTURE.

H. I. Budd.—I have a written report of our Society, but perhaps it is not in order to read it.

The Chair.—I think it would be well to read it, as it will probably be of interest to all present.*

Question.—Did I understand you correctly in regard to the number of bushels of corn raised, per acre, by W. R. Lippincott?

Mr. Budd.—Yes, sir; he raised 120 bushels per acre, and another party raised 122 bushels per acre.

Question.—Did I also understand you correctly in regard to a yield of 900 baskets of potatoes to the acre?

Mr. Budd.—Yes, sir; 900 baskets per acre.

Question.—How much did each basket hold?

Mr. Budd.—About the same as an ordinary peach basket.

Question.—Even if the baskets held but a half bushel each, that would be a yield of 450 bushels per acre, and that is certainly an enormous yield. It is simply wonderful. It is the largest yield I ever heard of.

A Member.—How was that result arrived at?

The Chair.—I cannot permit this report, which has been made so able, and which is so interesting and so valuable to us all, to pass

* Mr. Budd's interesting report will be found in its proper place in the report.

without alluding to some portions of it. We all know that Burlington county is one of the richest agricultural counties of the State, but if every county would be as specific in gathering this information as Mr. Budd has been, they might also make as creditable a showing. I would like to see a full report from every county in the State, and I trust that, another year, united effort may be made to gather together as much information of interest to the farming community as is possible. Let us have full statistics of all the products of the farm, of whatever character. Such reports would be not only very instructive but very useful. Nothing can be more useful than this to us all, as farmers. We should also have reports of all the industries of the State, as pertaining to farming. We want to know what each can do, and then we want to know which method is the best. We want to know how to use our land to the best advantage. It would seem that what one farmer can do, the rest should be able to do, under like conditions.

Let us take this matter up earnestly, and see what can be done next year.

CAMDEN COUNTY BOARD OF AGRICULTURE.

Mr. Edward Burrough.—I submit the following report, acting by direction of the Camden County Board. [This report will be found among the county reports.]

CAPE MAY COUNTY BOARD OF AGRICULTURE.

No delegate present.

CUMBERLAND COUNTY BOARD OF AGRICULTURE.

W. O. Garrison.—The report of the Cumberland County Board will be found in full under the proper heading in the county reports.

Question.—Did I understand you correctly in regard to the yield per acre, given in your report?

Mr. Garrison.—Yes, sir.

ESSEX COUNTY BOARD OF AGRICULTURE.

No delegate present.

Mr. Baldwin, the delegate, expected in the afternoon.

GLOUCESTER COUNTY BOARD OF AGRICULTURE.

The Secretary.—I have a communication here, stating that there will be a delegate present some time to-day.

HUNTERDON COUNTY BOARD OF AGRICULTURE.

Judge Holcombe.—I can give you nothing but a verbal report, until I can write one out for you.

The Secretary.—When can you let me have it, Judge?

Judge Holcombe.—I will write it out for you as soon as I can. I want to settle with our Treasurer next Monday a week, and as soon as that is done I will be ready to write out a report.

Our association resolved to meet on the first Monday in December and on the last Saturday in January, by my request, to get up an exhibit to bring here. I put off going to a funeral to go, and lo and behold! when I got there I was the only one there. I have brought my exhibit with me to-day, and if every one of our members had done as well we would have had a very creditable display here. If each delegate here had brought as much as I did, we would have had a nice showing, too. There is nothing here with mine except one can of wheat.

MERCER COUNTY BOARD OF AGRICULTURE.

Franklin Dye.—Our county organization is only in its second year. We are only children when compared with stalwarts like Burlington County. I am glad to have this statement here which I am about to make, but I am sorry, now that I have heard so much from other counties, that I had not prepared a more extended report.

I would also state that I have forgotten my credentials, but Mr. Ege will vouch for me.

I wish to say, merely, that the interests of Mercer county are varied. The large and increasing manufacturing enterprises of Trenton bring to our doors thousands of the non-producing classes to be fed. To meet the demand, farmers in close proximity to the city are giving increased attention to all kinds of market gardening and the raising of small fruits, and to the production of milk.

Some seventy-five or more persons are now engaged in the retail

milk business, (some say 100 or more,) requiring the present milk product of most of the farmers within a radius of from three to four miles around the city.

The oat crop was very materially injured, about the time of cutting, by very heavy rains. Some fields in our county were almost entirely ruined by the fly. Mr. John Phillips had a large field entirely ruined by it.

We have one creamery in our county—that is all I know of, at least.

In connection with the statement in his paper in regard to the wheat industry, he stated :

Messrs. Howell & Sons, of Trenton, have recently put into their new mills, the "Cornelia," the roller process entire, thus increasing their capacity to 700 bushels of wheat per day. Of course, this does not compare with the large flouring mills in Minneapolis, Minn., but it is a very creditable showing for the State of New Jersey.

He also stated that Mr. Dalrymple had read a very interesting paper before their association, entitled "Little Things in Farming; Items of Waste and Profit sometimes Overlooked."

The paper was handed the Secretary for publication in the annual report, if he thought it worthy of a place. [This paper will be found in the report.]

Mr. Dye continued.—There is another matter to which I wish to call the attention of the Board, and that is that of the defacement of our highways in various ways.

Our President, Mr. Ege, met with a serious accident on this account, his horse having been frightened and ran away with him. It cost him \$51 for necessary repairs on account of this. I think there should be a law passed prohibiting this defacement, so that we might make of our roads beautiful drives for our farmers.

The Chair.—There is another matter in connection with the roads. If any bill is passed by the Legislature, it ought to be one to prevent the farmers from encroaching on the roads themselves, as this defaces them as much as anything else. We constantly see rail-piles, brush-heaps, briars and weeds growing in the fence corners along our roads. These things spoil the roads as much as anything else can possibly. Many farmers do not seem to have enough land, and are encroaching upon the roads, and are farming a part of it. [Laughter.]

Judge Holcombe.—I hope this matter will not be passed over, now.

We have the same trouble in Hunterdon county, exactly. A party will drive a drove of 100 sheep along the roads, and these sheep are constantly dropping carrot seeds, which spring up and grow and flourish, and we have the greatest trouble to get rid of them.

They are much like the ox-eyed daisy, you know. The attempt to keep this weed down, and keep it out, is giving us a great deal of trouble. Then come the briers again, they scratch the wool off the sheep and this lodges the seed. In this way, in my judgment, our roads are getting full of weeds.

There is a piece of timber land near me, cut off about five years ago, and it is fairly alive with the Canada thistle. We do not know what is the reason, but I think I can judge. The timber men, when cutting the timber, fed their horses in the woods, and wherever their horses were fed there is where the thistle first came up. We think the oats fed came from Canada, and that the seed of this terrible pest was dropped there by the horses. They are getting to be a wonderful pest. I have lived for thirty years on my farm and never had a Canada thistle, till I found one in a brush-heap. I cut it off at once, but they always appeared there again. Now I cut them off with my pen knife and put a handful of salt on the stump or stool. The only place I have them is where this brush-heap was. I use kerosene and salt on the stools after I cut them off. This one little spot, where the brush-heap was, has cost me a great deal of trouble.

Mr. G. W. Thompson.—For the information of the gentleman who has just sat down, there is a fine of twenty-five cents on every Canada thistle found on the property of a land owner. If he can find out who owns the piece of woodland where these thistles are growing, you can make a good thing of it, as half the fines go to the informer and the other half towards keeping the poor.

Judge Holcombe.—That is not the only place they are growing. It is full of them up along the Delaware river beside the railroad tracks owned by the Belvidere Railroad Company or the Pennsylvania Railroad Company.

Mr. Forsythe.—Well, get at them about it and make them pay.

Judge Holcombe.—We have put it in the hands of lawyers, but they are afraid to say anything; they are afraid to do anything in the matter at all. We have got to fight them, but the lawyers are afraid to take hold. They are afraid to do their duty. I am well aware of the law. The trouble is to put it in force.

MIDDLESEX COUNTY FARMERS' CLUB.

G. W. Thompson.—We are not in as flourishing a condition as could be desirable, yet we have hung on for so many years that we hope to see it in better condition. In accordance with the old adage, "the nearer the church the farther from grace," I suppose our members do not take the interest they should. The light which shines in some portions, I suppose, is too great for them.

The canning industry with us is the main one, though it is not a very successful one. While in a prosperous condition, the farmers felt them a safe outlet for their surplus fruits and vegetables. Before these industries were started, the town was full of market-wagons loaded with this class of produce. The grocerymen were very independent, until the factory was started, when they became much more accommodating, but they were very hard to please before.

We have to lament this year that our goods have not brought good prices. The vegetables produced in the neighborhood of New Brunswick were largely sold there, the balance going to New York.

The milk interest in Middlesex county has added largely to its products. Since the establishment of a milk route by the Pennsylvania Railroad Company, it has gained largely, and we have secured a good market in New York for our milk.

Our people are beginning to take more interest in improved milk stock. There are not many of them taking hold of it, but they are looking towards it and will probably take hold of the thing. I will give the Secretary a little report of the proceedings of our association.

MONMOUTH COUNTY BOARD OF AGRICULTURE.

Mr. D. D. Denise.—Our Board is in its infancy, as you can all see by reference to my report.

Question.—Did I understand you correctly in regard to the statement that Mr. Combs had raised 281 bushels of potatoes on one-half an acre?

Mr. Denise.—Yes, sir; he raised 281 bushels from one-half an acre. He asked me to come over and attend to the digging, and I did so. The potatoes were dug under my supervision, and were taken to the public scales and weighed by a disinterested party.

Question. How were those potatoes farmed?

Mr. Denise.—They were not farmed much at all, they were fertilized or mulched with some chaff.

Question.—In what way were they farmed?

Mr. Denise.—I do not think they were farmed at all; they were not plowed, I know.

Question.—What was done to them, then?

Mr. Denise.—They were cultivated, I believe, with a hand hoe.

Question.—What fertilizer was used?

Mr. Denise.—I believe he used almost everything.

Mr. Forsythe.—Was it bone or manure, or what was it?

Mr. Denise.—I do not know what kind of fertilizer was used, but I believe Mr. Combs used horse, or stable manure and phosphate.

Mr. Forsythe.—Mr. President, we don't want any bob-tailed reports here; I would like to know what kind of fertilizer was used.

Mr. Denise.—Why do you want to know? Are you an agent for a fertilizer? He used the Mapes' fertilizer, if you want to know.

A Member.—Mr. Combs told me he had used almost everything—fertilizer, manure, Squankum marl, and everything else.

Mr. Denise.—Yes, sir; I believe he did use Squankum marl; I guess he used all he could get on.

Mr. Denise continued.—We have two creameries in our county, but I was unable to get a report from them, though I wrote them all.

I do not know whether it is because they are making so much money out of their creameries, and don't want people to know it, or what is the trouble. I know I could not get the information I asked for.

I also have a report here of the Monmouth County Agricultural Society. It is very short, and perhaps it would be just as well to have it published.

Report handed to the Secretary.

MORRIS COUNTY BOARD OF AGRICULTURE.

No delegate present.

THE JERSEY BREEDERS' CLUB.

John I. Bishop.—I have but a short report to make. I will first give you the list of officers. This club was organized in March, 1879,

for the promotion of the Jersey cattle interests. Its membership has increased, since the organization, from eight to twenty-one.

SALEM COUNTY BOARD OF AGRICULTURE.

No delegate present.

A member of that association.—I have a short statement here from the West Jersey Association. I also have a paper here by Mr. Paulding, on native blooded stock. I also have an essay by Mr. Pettit on "Jersey Red Swine."

The Chair.—As it is getting late, we will postpone the reading of that until the afternoon session. We will discontinue the programme until this afternoon.

The Chair then announced the following committees:

Committee on Credentials.—Edward Burrough, J. H. M. Cook, D. D. Denise.

Committee on Officers.—Thomas T. Kinney, William Parry, John De Mott.

I also understand there is a resolution to be presented before we adjourn.

Mr. Dye.—I have here a copy of a resolution, which I hope we will have explained as to what it is intended for:

Resolved, That the President, Thomas H. Dudley, P. T. Quinn and William S. Taylor be a committee to prepare a supplement to the State Board of Agriculture Act passed last winter, to widen its provisions for membership.

The Secretary.—I drew up the resolution on account of the suggestion contained in the opening remarks of the President.

On motion, the resolution was adopted as read.

The Chair.—I now declare a recess until 2:30 this afternoon.

AFTERNOON SESSION.

Meeting called to order by the Chair, at 2:30 P. M.

Mr. Dye.—I will begin this afternoon where I left off this morning. The paper I have here is on "The New Jersey Red Swine Breeders' Association."

G. W. Thompson (while the paper was being read by Mr. Dye).—Mr. President, I rise to a point of order.

The Chair.—Let us hear it.

Mr. Thompson.—The point is this—that this association is not a stock raising association, and that this association is not intended to give any one a chance to advertise the Jersey Red swine or any other swine. I think the time of this association is entirely too valuable to spend in listening to such a paper.

Mr. Dye.—Mr. President, there is only half a page left to read ; it will take longer to settle this than to finish reading the paper.

The Chair.—You can finish reading the paper. The point of order is not well taken. [This paper will be found in the report.]

SOMERSET COUNTY AGRICULTURAL SOCIETY.

The Secretary.—Mr. Potter will be with us, though he could not come just at present, but will send in his paper.

UNION COUNTY BOARD OF AGRICULTURE.

Mr. Frank Hosinger.—I was informed by our Secretary that he had forwarded our report to the Secretary.

The Secretary.—I have the paper here.

WARREN COUNTY BOARD OF AGRICULTURE.

No delegate present.

A member of this association.—Our Secretary expected to be here ; I do not know why he has not come.

Somerset county recalled.

Mr. Potter.—I have no report ready, but will make a written one shortly.

The Chair.—We are now ready for the report of the Committee on Credentials.

Mr. Burrough.—We are not ready yet.

Mr. Burrough, delegate from Camden county.—Before we proceed with the programme, I desire to state that I have been very well pleased with the reports handed in, but I regret to see that some of the counties have not done their part as they might have done.

They have not quite come up to our expectations. While we prefer full reports, we do not care for long ones, unless they are to the point and give special or general information on methods of cultivating and improving stock, &c., of the State. We do not care for these without they serve this purpose. We are all alike interested in the advancement of agriculture in our State.

We want the growers of Monmouth county to come here and tell us how they grow their crops. The same with other counties. We are willing to give our experience, too, for their benefit. We know the growers of the different counties have not been as helping to each other as they might have been. Let us give our experience. We know what Burlington county has done, and why can we not do the same? We want the members from the upper part of the State to give their experience for the benefit of the members from the lower part. We will give the members from the upper part of the State our experience for their benefit.

I trust this may be so in the future, and I also hope we may have fuller reports from all counties next year in this light. I call the attention of the members to these particular points.

Mr. President, you are aware that in presenting the report of Camden county I was instructed to present the following resolution in relation to the English sparrow :

WHEREAS, The depredations of the English sparrow in this county have assumed such proportions that they are a serious disadvantage to the agriculturist, horticulturist and florist; therefore, be it

Resolved, That it is the experience and opinion of this Board that the English sparrow is a destructive and dangerous obstacle to farmers and seedsmen, and that the damage inflicted upon our crops far exceed any compensating benefits they confer.

Resolved, That we believe it to be to the interest of the agriculturist, horticulturist and florist, that the English sparrows should no longer be protected as insectivorous birds, and that we hereby instruct our delegate to the State Board of Agriculture to present a copy of these resolutions and ask an expression of opinion as to their usefulness.

Resolved, That in the event of their indorsement, that the Committee on Legislation be instructed to draft a supplement to the insectivorous bird law, exempting said sparrows from its provisions.

On motion, the resolution was adopted.

The Secretary.—In order to make the resolution more effective, Mr. President, I move you, sir, that it be referred to a Committee on

Legislation, to be appointed by the chair, and to consist of three members.

Mr. Parry.—The Committee on Legislation was not appointed last year.

A member of Executive Committee, Mr. Taylor.—The matter was left in the hands of the Executive Committee, and the proper action was taken.

The Secretary.—I move you, sir, Mr. President, that the matter be left in the hands of the newly-elected Executive Committee, with the request that they carry out the measures of the resolution.

Adopted.

Mr. Dye.—I would also like to present a resolution referring to a system of visitation by delegates :

Believing it would tend to advance the interests of agriculture in the State if the County Boards would appoint delegates to attend their several meetings; therefore,

Resolved, That the County Boards of Agriculture, as far as practicable, are requested to establish a system of visitation by delegates for mutual benefit, and report to the next meeting of this Board.

On motion, the resolution was adopted.

The Chair.—The next in order on the programme is the reading of the President's annual address. [The President's address will be found immediately following end of minutes.]

In connection with the paper, mentioning that it was probable that the railway system of India would be extended, he remarked :

"When I say that it is probable this will be done, as approved by the Committee of Parliament on Railways, when you know that this committee is composed of nineteen members of the House of Parliament, and some seven members of the present English Cabinet, you can readily see that the assertion that this will probably be approved by the committee and passed by Parliament is a very probable result, as they are certainly an authority under such circumstances."

Judge Parry.—I would move you that the thanks of this meeting be extended to our worthy President for the very able and highly-interesting paper which he has favored us with, and that the papers be then given the Secretary for publication.

Seconded and unanimously carried. [Applause.]

The Chair.—I have the honor of presenting to this meeting one of the ablest and best entomologists in this country, or in any other, our national entomologist. I take great pleasure in introducing to you Prof. Riley, who will entertain you with remarks on insects. [Prof. Riley's paper will be found in the body of this volume.]

The Secretary.—I move you, sir, Mr. President, that a committee of three be appointed to pass on the products exhibited on our tables.

The Chair.—I appoint Mr. Joshua Forsythe, Mr. J. D. Rogers and Mr. I. W. Nicholson, to serve on that committee.

The Secretary.—I have here a communication addressed to the State Agricultural Society, in mistake, I presume, referring to the appointment of delegates to attend the convention of the National Cotton Planters' Association.

The Chair.—We will lay that over until to-morrow morning for definite action.

Mr. Burrough.—Before we go any further I think it would be well to extend a vote of thanks for the very able and interesting addresses we have heard this afternoon.

Unanimously carried.

The Chair.—The next in order on the programme is a paper on tobacco, by Col. James Duffy, of Lancaster county, Pa., but I am sorry to have to state to you that Col. Duffy is very ill. I received a communication from him, written from a sick bed, saying that he is unable to attend. I regret this especially, as Col. Duffy is one of the largest tobacco growers in the State of Pennsylvania, but, at the same time, we are very fortunate in having with us Mr. George Blight, of Pennsylvania, who will address you. I take great pleasure in introducing to you Mr. George Blight.

Geo. Blight.—I shall not speak to you on the subject of tobacco, but will take that of the "Dairy." Having a great fondness for cattle, I have made myself familiar with all the large herds in and around Philadelphia, and have also visited all the important dairies in the vicinity. In doing this I have made it my practice to make myself thoroughly familiar with the points of the cattle possessed by the owner, in regard to milking qualities and other points. I have not only done this with the finer cattle, but with all the cattle in these dairies, of all ages and kinds. It is of the information gathered in this way that I now address you in this article. Many of the points I shall touch on are also familiar to you. I have no doubt of that;

but there are, perhaps, some of them which will be entirely new to you, and which you would like to hear.

This subject of judging of the capacity of cattle as to milking qualities was first brought to my notice as early as 1844.

A German, by the name of Meffling, came to this country and was introduced into the Philadelphia Society of Agriculture. He claimed to be able to judge a milch cow by her looks, and could say how many quarts of milk she would give, &c. Of course we all laughed at and ridiculed him, because we did not believe it.

He did not give in, however, but asked to have a committee appointed to go with him and look into the claims he made, visiting the different dairies in the neighborhood, and judging for ourselves whether or not he was able to substantiate his claims.

This committee was appointed, and I was fortunate enough to be a member of it. We went to one of the large dairies and that man portrayed the character of every cow in it. He would look at a cow and say "that cow will give fifteen quarts of milk," and the proprietor would be dumb with astonishment. He had hit it exactly, and so he did in every case. Everything he said in regard to the different cows proved to be true in every respect. We spent three or four days going around with him to the different dairies, and he proved he could do what he had asserted. We were all convinced that he could do all he claimed.

In the year 1877 a commission was appointed to look into this thing and a published report was made, which I have no doubt you have all received. I am a great enthusiast on this subject, and I think it is one which should be much more widely known among farmers in buying their milch cows. I have explained this thing to several farmers and they have found it to be a good thing, and a great saving to them when buying their milch cows.

One man said to me, "You have saved me \$500 by the knowledge you have given me in regard to cattle."

Another man said to me, "You have saved me \$1,000 by this information."

I have made these few remarks with the hope that it will lead you to look into the facts and make yourself familiar with them. [Mr. Blight's essay will be found in the body of this report.]

The Chair.—You will all observe on our programme that Governor Curtin is to address you in the Assembly Room this evening at

eight o'clock. I am very sorry to have to inform you that the address will not be given. I have a letter from Mrs. Curtin, stating that the Governor is quite ill, and that it will, therefore, be impossible for him to get here.

We have here in this city, I understand, Gen. C. H. Barney, Commissioner for the State of New Jersey to the New Orleans Industrial and Cotton Exposition, and if it is the wish of the members of this Board, he will address the farmers here, in this room, this evening.

What is the meeting's wish in this matter? I have no doubt we can have a very interesting meeting here, if it is your wish. After I received the letter from Mrs. Curtin I went to see an intimate friend of mine, and one whom I feel sure you would have liked to hear, and who would have been glad to address you—Col. McClure—but I found he was out of town. I have no doubt he would have come had I been able to see him, but, as it is, we cannot have him. He is a very able and fluent speaker, and one who would, no doubt, have greatly interested you.

What is the desire of the meeting in regard to Gen. Barney? There is nothing else on the programme for this evening.

Judge Holcombe.—Mr. President, I move you that Gen. Barney be invited to address us this evening. If his address does not last long we can have the report of the Committee on Legislation, appointed last year. I have not heard from them, yet.

On motion, the meeting adjourned until 8 o'clock, to meet in the Supreme Court Room.

The Chair.—Will those members or delegates who have not yet presented their credentials to the Committee on Credentials, please do so at once, handing them to Mr. Burrough, of Merchantville.

EVENING SESSION.

Meeting called to order at 8 o'clock by the Chair.

The Chair.—We have here Gen. C. H. Barney, Commissioner for the State of New Jersey to the New Orleans Exposition. I am satisfied that you will be very glad to hear from him about the New Orleans Exposition. I take great pleasure in introducing him to you.

Gen. C. H. Barney.—Mr. President, it has been suggested that the members of the State Board of Agriculture would like to hear some account of the New Orleans Exposition, and particularly about the part taken by the State of New Jersey therein. Of course you are all familiar, to a certain extent, with its features, as published in the newspapers. [This paper will be found in the body of the volume.]

The Chair.—It occurs to the Chair that there may, perhaps, be some gentleman here who may have some intention of visiting the New Orleans Exposition, and perhaps there are also others here who would like to know more about it. I feel sure that the gentleman who has just addressed you will be very glad to answer any questions you may wish to put to him.

Gen. Barney.—I shall be pleased to answer any questions which may be put by any gentleman here.

The Chair.—There is one question which I would like to ask myself, as there does not appear to be any one else asking questions. It is this: How does the New Orleans Exposition compare with the Centennial Exposition, held in Philadelphia, in 1876? I ask this more especially with regard to the foreign exhibits and exhibitors from South America and other foreign countries. I presume the General can answer this question?

Gen. Barney.—During the time I was there, which comprised the latter part of the month of December and the early part of January, my time was very fully occupied in arranging our exhibits, and I had not much time to look around to see what other people were doing.

I noticed, however, in visiting the office of the Director-General, which we generally did every day, to make our reports, when I passed the place where the foreign exhibits were placed, that the exhibits were not yet fully fixed up, but I feel sure that, when they are all arranged, they will compare very well with the foreign exhibits at the Centennial Exposition of 1876.

The Mexican government, in particular, makes a very large and fine display. There was an appropriation made of, I think, \$250,000 to cover the cost of making their display. They have two very large spaces in the main building, where they have 180 large and handsome cases, in which their exhibits are displayed. Besides this, they have large exhibits outside of the main building.

One building outside is occupied by their troops, which have been sent there to represent them.

Judge Parry.—I have been very much gratified by the minute and clear description given by the General. In addition to the features mentioned by the General, there are others which greatly attract our attention when we get there, and it is well for each one to take his or her choice of the things most to be admired.

There are many other things of interest which the General might have mentioned to you. I think one of the most wonderful sights is the immense cactuses and palms, in all their glorious luxuriance. I think this the most wonderful exhibit made by Mexico. Why, it must have cost them an immense sum of money to transport them to this place, without destroying them.

The beautiful flowers displayed, the wonderful cactuses, the immense royal palms, rising to a height of thirty or forty feet, are indeed a grand and wonderful sight to behold.

You can judge of the cost of transporting them to New Orleans. Why, they hauled their stuff there by the car-load.

The beautiful century plant is also a fine sight. I never saw such things before, except in the hot-houses of the rich. I think there were some forty varieties of palms exhibited there, varieties which are never seen except in our hot-houses in the north.

There, also, we see the glorious palmetto tree, historic in every sense, and which has been known in history as long as our country has. They are very beautiful, graceful and grand. There we see all kinds of beautiful things, such as we never see here, in their natural state. I dwell upon this because I have a particular weakness in this direction.

The exhibit of horses was also the finest I ever saw. I never saw anything like them in my life, and I have seen many fine horses. I made the remark to a gentleman there that I never saw anything to compare with this exhibit. He said, "No, and you will never see the like again." I feel sure that nothing of the kind has ever been seen anywhere before. There never was such a collection of horses made before. It seemed as if every State and country had sent their best, largest and choicest horses to this exhibition. The three great breeds of horses were all represented there. There were the Clydesdale, the Percheron and the Norman breeds. They really seemed to vie with each other in their great strength and beauty.

It is impossible for any one to convey any clear and adequate idea of the beautiful things to be seen at this exposition. It must be seen

to be understood and appreciated. There is enough there for every one's taste, and there is nothing there but that to be seen is to be admired.

Mr. Denise.—I move you, Mr. President, that a vote of thanks be tendered Mr. Barney for his able, interesting and instructive address.

Mr. Burrough.—I have been requested to ask the General whether in going to New Orleans through the old historic battle-grounds of the Rebellion, through the Valley of the Shenandoah, marks of the conflicts may still be seen.

Gen. Barney.—I think not. In fact, but little can be seen of the old battle-grounds. In visiting some of the scenes of the battles of twenty years ago the spots are no longer recognizable, and can hardly be identified. The change in the face of the country is simply wonderful.

When I was in New Orleans last December, I went on one occasion out to an old camping-ground near the city, where I had been in camp during the war, as I had a curiosity to see how it looked. I rode along, looking for the spot, and had ridden fully a half mile beyond it without being able to recognize it. I knew, however, that I must have passed it, and asked an old darkey where the old fort had been. He directed me to turn back, and when I arrived at the spot I could hardly recognize any part of it, as but very little remains of the old fort now. The colored people in the neighborhood showed me a little mound of earth, perhaps as high as this desk, which is all that is left of the magazine of the old fort, and this was at that time, when in use as a magazine, from thirty to thirty-five feet in height. No other part of the fort was recognizable at all. The ramparts were entirely obliterated. No sign of them at all.

The Chair.—You will recollect that, before closing our afternoon session, the Governor of this State asked that we select delegates to the Cotton Planters' meeting, on the 10th of February.

Since that time a number of names have been handed in, the parties signifying their willingness to attend. The Secretary will read them to you.

The Secretary.—The following offer to attend the Cotton Planters' meeting, as delegates, on the 10th of February: Thomas H. Dudley, H. I. Budd, B. F. Gillingham and Mortimer Whitehead.

The Chair.—I would state that there is no remuneration for this service. Those who are desirous of going must go at their own expense.

Judge Holcombe.—Being as the Governor has sent this communication to this Board, I think the Legislature should pay the expenses of those who may go as delegates.

Mr. Ebert.—I have not heard a word about the display of statuary, paintings and the arts. Neither Judge Parry nor Gen. Barney have told us about this. There was such a fine display at the Centennial Exposition, at Philadelphia, in 1876, that every one was delighted with it, and I have wondered whether the same attention has been given it at the New Orleans Exposition.

Gen. Barney.—They have an art gallery there, but I am sorry to say that during the time I was there I did not see the inside of it, though I passed there very often. The building is about the same size as the one in Philadelphia, but is built of iron, the light being introduced entirely from the roof of the building. The paintings were being hung during the month of December, when I was there, as I was informed, but the building had not yet been opened for the public when I left there. Perhaps Judge Parry, having left there much later than I did, can give us some information. Judge, was the building open when you left there?

Judge Parry.—No, sir; it was not yet open when we left there. I suppose it will soon be opened though. I understood they were getting ready very rapidly when I was there. If the delegates go down there in February, I have no doubt it will be opened then. [Laughter.]

Prof. Riley.—I think the most beautiful thing I saw there was the live-oak tree. I never saw avenues of live-oaks which would equal them, or begin to compare with them, in fact. They were draped with beautiful hanging moss, and were certainly a beautiful sight; but I do not think any of you have ever seen anything to equal them in the North. I have traveled all through the Southern States, and I have never yet seen any of them to compare with those I saw in New Orleans. They make a most beautiful display, a sight which will well reward any northerner who may visit the New Orleans Exposition, even were there no other objects of interest there to be seen.

The Chair.—My attention has been called to the fact that members of this Board, here present, seem to feel a hesitancy in speaking, or in asking questions. There seems to be a misunderstanding on the part of the members here present. I wish to explain that all those

here present, if members of any grange, agricultural society, agricultural board, or other society interested in agriculture, and even if they are not delegates, have a perfect right to take part in the proceedings of this Board, and the Chair is particularly anxious that all the members of the Board shall take part in the proceedings. We want you to take part in the discussions of papers or questions before us, and in everything pertaining to agriculture. We have met here for that purpose. Let us have this distinctly understood. We want you all to take part, and make the meeting interesting. We have been brought together for the purpose of exchanging methods, views and all kinds of information pertaining to agriculture, and also for the interchange of experience and opinions. I therefore hope that all members here present will feel themselves at liberty to take part in any discussion, on any question, or on any matters which may be brought before this Board. Ask as many questions as you see fit, and give your views when you think you can in any way enlighten the members of this Board on subjects brought before it for consideration. In this way we can bring out the views of all those present, and we may all derive some benefit from such an interchange. There is no question which has been so thoroughly discussed that some new and interesting points cannot be evolved. There is no man so well informed that he can learn nothing more. No matter how much a man may know, or have studied, he can receive some further information and help from association with others. None of us are too old to learn. This is a school for us all, and we can all derive benefit from the matter brought before us for discussion and consideration. Not only should we be willing to learn, but we should also be willing to teach others, and help each other. We will thus be a benefit to all those around us. We do not live for ourselves alone, but for those around us as well. Let it be distinctly understood, then, that all are invited to express their views.

Judge Holcombe.—I had expected to see, in this room, three or four large tables filled with exhibits, corn, grain, fruits, nuts, &c., as our worthy Secretary asked every one to bring samples of his farm products along with him.

We have heard a great deal here to-day about the big crops of corn, wheat and potatoes raised from an acre. Now, Mr. President, let us hear from these people how these big crops were raised, or how the results, as to the amount of the crop, were arrived at.

Were they taken honestly from one field, as the average yield, or were they only picked spots, in the best fields?

I want to say just one word about these big crops before we go any further.

Every Spring the farmers of Bucks county hold a meeting, and we who live on this side of the river sometimes are glad to go over and hear them. The views obtained from others in this way are very beneficial to us all.

In regard to obtaining good seed. Some few years ago, I bought seed potatoes down in Salem county and brought them up here to plant. I found they did splendidly with me, and I had a good crop. I laid it all to the fact that they came from the same State. At the same time, I bought seed which came from the Western States, but they did not do nearly as well. I raised three times as many potatoes from the Jersey as from the Western seed, and they were all treated alike, and should have given the same results.

I think this shows the importance of the greatest care needed in the choice of any kind of seed for planting.

While we were waiting to come here to-night, quite a debate took place in regard to fertilizers. Of course I always have something to say [Laughter] and I told them how I managed about fertilizers. I go in for hen manure. I have all the hen-houses that I can fill with chickens. The manure from these hen-houses I keep until Spring, and then run it through a threshing machine and cover it over. My friend Rogers, there, says I should cover it over with kainit, to keep the ammonia from evaporating. I use plaster and marl. Now, we want to know, Mr. President, which will be the best to use for this purpose, kainit, plaster or marl. We wish to know which to buy of these three.

An old friend of mine, whom I once visited, had a large number of composts, perhaps as large as this room, in his fields, and the steam was coming from it in clouds. I said to him, "Why don't you stop it?" He looked at me in surprise. I told him if he covered the manure with plaster it would stop the evaporation of the ammonia. As it was, the ammonia was all escaping, but plaster would retain it all.

Now, when I run my hen manure through the threshing machine, in twenty-four hours afterwards I cannot bear my hand on it. I cover it over with plaster. Friend Rogers, there, thinks it should be covered with kainit.

The Chair.—In regard to this question of changing seeds, when I was in Paris, a few years ago, I discovered a melon which was very fine in flavor, and which had a very fine flesh. Any of you who have been in Paris will remember having seen this melon, and will remember what a fine flavor it has. I took a great fancy to this melon, and thought I would try to introduce it in this country. I paid a waiter a sum of money for a number of these seeds, which I brought home with me and distributed among a number of farmers, who planted them, but the melon, when grown, was found to have deteriorated to such an extent as to be entirely different from the original fruit. It was, in fact, very poor, as grown here. The climate seemed to have affected the character of the fruit.

Prof. Smith, of Scotland, wrote me at one time that he had, by planting the seed of potatoes, secured some twenty different varieties of new potatoes. Among other recommendations in favor of these potatoes, he said they would withstand the rot. I thought they should be introduced here, if these were the facts, and I wrote the department in regard to them. In reply, they commissioned me to buy twenty bushels of each variety, which I did, and shipped them to this country.

While these vegetables, as raised in Scotland, did very well, and were very satisfactory, they were a complete failure here.

As grown here, they were found not to withstand the rot. In fact, there was not one of the whole lot which would withstand the rot. They were found to be inferior in every respect to the varieties already in use here. The climate of the European countries is so different from that of the United States that the same seed may be entirely inferior when reproduced in this country.

This theory is probably the one which will account for the difference in results with these potatoes.

There is another thing I would like to call your attention to. I have never been in California, but I am told that if we take the fruits growing on the Atlantic coast, and transfer them to the Pacific coast, the fruit produced there is greatly increased in size and flavor. If this is the case, these are very important facts.

I merely call the attention of this Board to these facts in order to provoke discussion. I think these are important questions, in connection with what we have already heard, in regard to the matter under discussion.

Mr. Burrough.—I am glad the gentleman on my left, Judge Hol-

combe, has made the remarks he has about fertilizers. My experience is much the same as his in this respect. I have used marl to cover my manure with. Plaster, I believe, is also very good for the same purpose.

His remarks go to confirm the remarks I made this morning in regard to our county boards. He has also honored Salem county, by acknowledging that he has found something good in it. I am in favor of reciprocity among farmers, as well as among other classes.

I think we should be more willing to exchange with each other when we have something good, and something which will benefit our neighbors in other counties. We are going to ask him still more questions, although he has told us a good many things already.

He is also at liberty to ask us as many questions as he may desire. We will answer them if we can. We shall be glad to reciprocate with him, and hope he will be willing to reciprocate with us. We would also like to have fuller reports from the county boards next year, though this Board must recognize the fact that it takes a good deal of time, and no little patience, for the secretaries of the different county boards and associations to prepare the statistics which we are all so anxious to hear. It also requires a great deal of patience to gather this information from the different members of their boards. We propose to compensate these secretaries for this work, recognizing, as we do, the amount of labor required. The work is undoubtedly onerous, and the State will certainly recognize this service. We trust the secretaries will bear these points in mind, and endeavor to give us fuller reports, that we may all derive the full benefit which this Board is intended to give.

Mr. Denise.—I believe one of the delegates here this morning reported 130 bushels of corn to the acre.

The Chair.—140 bushels, I believe, was reported by one of them.

Mr. Denise.—This so far exceeds Monmouth county that we have nothing to say. It goes way ahead of us.

Mr. Garrison, Cumberland county.—I wish the Chair had not added anything to my report as given this morning.

The Chair—I had no allusion to Cumberland county. I had allusion to the report read by the gentleman from Burlington county, in which he said that Mr. Lippincott had raised 120 bushels of corn to the acre; and then there was another much larger—I think 130 bushels to the acre.

Mr. Budd.—I mentioned one case of 120 bushels to the acre. Mr. Wills, of Burlington county, is here. I call upon him for this information.

Mr. Denise.—I do not dispute the statements made by any of the gentlemen.

Mr. Wills.—We took thirty-six hills of corn and husked them, and carried the corn out and weighed it, and it gave a crop of 132 bushels to the acre.

A Member.—How was it weighed?

Mr. Wells.—We weighed it on the cob.

Mr. Denise.—I do not think this is hardly a fair test of the whole field. Taking a few hills and testing them is not a fair average, or a fair test for the whole of the field.

I think when the gentlemen come here with their reports, they ought to give us the result of the whole field, and not the result of a few hills. That is not a fair test. This does not give us how much corn grows on an acre. It gives the result of a few hills, and that is all.

Mr. Thomson.—I would like to have a fair report, too.

Mr. Forsythe.—It has been my misfortune to be a farmer all my life, and I think I know something about it. Corn four and a half feet apart makes just sixty stacks to the acre; at four feet apart, seventy-five stacks to the acre. I have seen good crops of corn, but it takes good corn to turn out more than one bushel of corn to the stack.

At that rate we would have sixty or seventy-five bushels to the acre, according to the width of planting. I have heard people talk before, about their immense yields of corn. 130 bushels of corn to the acre would be two bushels of corn to the stack, and when you get it down as fine as that you get an enormous yield. Take the whole field, and I think you will find it is something less.

When you weigh corn right out of the field, with water and dirt and all on it, that is not *corn*. You can weigh corn full of water and get weight, but you don't get *bushels*. [Applause.]

Weigh some corn right out of the field in the Fall, and weigh it again next May, and I guess you will find you are losing considerable in weight. 150 pounds of corn weighed right out of the field will probably turn out some seventy-five or eighty pounds next May.

I think I have seen fields which yielded 90 or 100 bushels to the

acre; but when you tell me you go beyond that, there is something wrong—there is no fair test of the crop made.

The corn which I referred to as yielding 90 or 100 bushels to the acre was the biggest corn I ever did see. It is not often beaten, I can tell you. When you get a yield of one bushel of corn from a stack, I tell you you are getting a good yield of corn, and when you take fifty or sixty acres of corn, it must be very good, indeed, if it averages sixty bushels to the acre. You can raise bigger crops by calculation, but not by measuring or weighing.

A Member.—May I ask the gentleman how the corn was measured or weighed?

Mr. Forsythe.—I am well acquainted with the gentleman who read the report. The corn was, by actual weight, of fifty-six pounds to the bushel of shelled corn. He told me that the ground was carefully measured by a competent surveyor, naming him to me, but I cannot now recollect the gentleman's name. I have not the slightest doubt that the corn was carefully and fairly weighed and measured. I also know something about the land referred to, on which this corn grew.

The land referred to lies right along a river bottom, and the good, rich soil is perhaps eight to ten feet deep, of the very richest and best kind of mud, rich enough in itself without the addition of any manure or fertilizer, with the exception, perhaps, of a little lime occasionally, to keep it in good order, and loose. He applied 125 bushels of lime to the acre, and he raised 1,004 bushels of shelled corn. Without further manuring he sowed this ground to wheat and produced thirty-three and one-half bushels of wheat to the acre. I do not think there is the slightest reason to doubt this.

A Member.—How was the corn planted?

Mr. Forsythe.—I do not know at all how it was planted.

The Chair.—Was the wheat sown immediately after the corn?

Mr. Forsythe.—Yes, sir; it was sown immediately after the corn; that is the custom with us in Cumberland county.

Mr. Denise.—I don't want the gentlemen to think that I doubt their words. I only ask whether they know how much the crop was which was grown on the whole piece of ground. Did these gentlemen shell their corn and weigh it? If they did this, we are satisfied. Of course, if they did this from the whole field, we then know just what the crop was, and just what we are talking about. This is the only fair test in a thing of this kind.

The Chair.—I think the question a very pertinent and a very important one, and one which should be discussed fully by this Board.

The inference follows that if such a large crop of grain, or corn, can be produced from one acre of ground, or from one field, by one farmer, that it can be done on other ground by another farmer, using the same methods, and under the same circumstances. Let us have this fairly discussed before we leave it.

Judge Holcombe.—I don't want to do all the talking. I wish merely to say a few words about a big crop that I know something about.

Perhaps some of you remember seeing in the papers this year about a big crop of corn raised by one of our neighbors over here,* a Bucks county farmer. I know something about that crop, and I know how it was raised, and propose to tell you about it.

Two members of the Farmers' Club over there thought they could beat each other in raising corn. The big crop referred to in the papers was raised by one of these gentlemen. He did it in this way :

He had three acres of land of most excellent quality near his barn. Now, mind you, I want you to remember the manure he put on it. He plowed up this ground and put twenty-seven loads of hog manure on it, and planted it in corn. Then he sowed it to rye and fed the rye to his cows. In the Spring he plowed the rye under and put twenty-seven loads more of hog manure on it. After his corn was taken off he sowed it to rye again, allowing his cows to feed it off.

In the Spring he plowed it up again and put on twenty-seven loads more of hog manure. He then planted it to corn, in rows three and a half feet apart, and raised 152 bushels of corn (shelled) to the acre. This is the way the big crop was raised. [Laughter.]

Mr. Pierson, the greatest corn grower in Bucks county, fairly covers his ground with manure. Why, you can drive right out in his field, after he is done putting on manure, and can unhitch your horses and put on a heaping load of manure right around the wagon, without ever moving it a step. This is the way he manures his ground.

Another man, when he heard how this big crop was raised, said he would try it, too. They talked this over between them, and each thought he could beat the other. They did not bet on it [Laughter] but one says to the other, "If you beat me I will give you a horse," and the other says, "Well, and if you beat me I will give you a horse." They did not bet, but that was the way they fixed it. [Loud laughter.]

Mr. Pierson got his land in splendid order, and had everything ready, and came to me and said he was all ready now, except one thing—he did not know how he could retain the moisture in the ground.

I recommended him to use plenty of plaster for the moisture, and the result was very satisfactory.

Mr. Forsythe.—Mr. President, we have certainly heard some most wonderful stories here this afternoon and evening. I think none of these stories are more wonderful than those we have heard about New Orleans and the New Orleans Exposition.

These stories of the big crops of corn remind me of a field of corn I once saw which had been fertilized with such an enormous amount of manure. It certainly looked like a most beautiful crop; and so it was—it was the finest crop of stalks I ever saw. In this field the manure was put on as thick as he could plow it in. I saw one ear of corn in that field. Some people even said they saw three, but I never saw but one. [Laughter.] We have certainly heard some wonderful things here to-day, and one of them is about the plowing in Spain, which our President has told us about, with one jackass and one woman hitched to the plow. [Laughter.] Now, this is nothing new to me; I have often seen a woman and a jackass hitched together in this country. This is nothing uncommon here. We often see the same thing here; it is quite common.

Mr. Thompson.—Mr. President, the Legislative Committee, which was appointed at the last meeting of the Board, last year, to attend to the milk interests, has not yet reported that I have heard. Let us hear just what has been done. We would like to know all about it.

Mr. Taylor.—Mr. President, probably the gentleman on my left did not hear the report of the Executive Committee read this morning. The report he asks for was included in that, and has been explained here since.

The Committee on Legislation, which was to have been appointed, was neglected, and the matter of the milk law was left in the hands of the Executive Committee for attention.

We took charge of the work of this committee and had some three different bills referred to us, I think.

One of these bills was for the re-organization of the State Board of Agriculture, and one was this milk law.

We were requested to present an amendment of the milk law bill to

the Legislature, giving the right of trial by a jury. We did so, and the bill has now become a law.

All the bills we presented to the Legislature were passed, and I believe they were all passed unanimously.

Mr. Thompson.—I thank the gentleman for his information.

The Chair.—The question was asked in the early part of the evening by one of the members of the Board in regard to the potato crop in Monmouth county, which was referred to by the delegate from the county, and the person making the inquiry was anxious to know something more about it. Let us hear from the gentleman from Monmouth county, if he is with us. Is the delegate from Monmouth county in the room?

Mr. Denise.—I am the delegate from Monmouth county. Mr. Combs, the gentleman who made the report, is with us in the room. I think he can give you the information asked for by the gentleman this morning.

Mr. Combs.—Mr. President, there was nothing especial about it. I guess it was more a matter of good luck than anything else.

It was a piece of ground which had belonged to me only about three or four years. Before I got it, it had been very much neglected, and nothing had been grown on it. I do not think there had been a crop grown on it for three years or more, and the weeds had run out. The soil was very light in 1880, when it was first plowed. It was planted in corn, with no manure but a little fertilizer. We did not apply any manure at all.

The Mapes fertilizer was applied at the rate of 1,000 pounds to the acre. It was applied broadcast, by the way, and the ground was very dry. The ears of corn flopped right over before they were ripe. I think the yield of corn was about fifty bushels of shelled corn to the acre.

The next year the field was planted to potatoes, and 800 pounds of fertilizer to the acre was put on, and we had a splendid crop of potatoes.

A Member.—How was the corn planted?

Mr. Combs.—We planted it in rows and hills.

We followed the potatoes with wheat, and applied 500 pounds of fertilizer to the acre. The result was a yield of over forty bushels of wheat to the acre. I sowed clover in the Spring, and, in the Fall, applied about twenty loads of manure to the half acre.

A Member.—How much manure did you say?

Mr. Combs.—About twenty loads to the half acre. This is not very exact. I am not sure of the exact quantity.

This was plowed under in the following Spring, and planted with potatoes. We planted these potatoes very close together, the rows about eighteen inches apart, and the seed about twelve inches apart in the row. We did not give them much cultivation, because they were so close together. Until they got up to about three inches high we used the Thomas smoothing harrow several times. This was all we did. We went over the crop with this harrow, keeping down the weeds, until the potatoes were two or three inches high.

Just before we stopped we took the cultivator, and took all the teeth out of it but one, and went through them with this. We did not plow them. This was all we did to them. This was done the last thing, just before we stopped farming them. Then we took chaff and spread it two inches deep over the rows.

When covering with chaff we left four rows uncovered, but when we dug the crop we could not see much difference in them. We then let them grow. These potatoes were the finest and largest of all the potatoes we raised.

A Member.—What kind of potatoes did you plant?

Mr. Combs.—We planted the Mammoth Pearl.

A Member.—How did you cut them?

Mr. Combs.—We cut them the same as ordinarily. We generally cut them one eye to a piece.

A Member.—And how many bushels did you say you got from the one-half acre?

Mr. Combs.—We got 286 bushels, about. There were 16,829 pounds of potatoes.

A Member.—Was the piece of ground exactly one-half an acre?

Mr. Combs.—Yes, sir; it was accurately measured, and was just exactly one-half of an acre.

A Member.—How did you dig them?

Mr. Combs.—The potatoes were dug and placed in heaps. Then we picked them up from the heaps and put them in the wagon, and then they were taken to the public scales and accurately weighed. The test was as nearly fair as it could possibly be taken.

A Member.—How did your other potatoes turn out?

Mr. Combs.—It may be a matter of interest to you to know that I

planted another half acre right beside these, in which the seed were Northern seed. I bought them from a Northern State. The seed I have just told you about, on the last half acre, were home seed, and of my own growing. I generally change my seed every second year. The potatoes raised from my own seed were but a little short in quantity, but they were very short in quality. They were also very grubby. They only fell short of the other half acre some few pounds.

A Member.—Did you weigh them, too.

Mr. Combs.—No, sir; we did not weigh them at all. We judged them to be but little short of the others in weight and quantity.

A Member.—How were the potatoes on the first half acre, in regard to size?

Mr. Combs.—The crop on the first half acre were very fine. The potatoes were so large they overrun in weight. We had 102 barrels by measure, and by weight they turned out 106 barrels.

Every one who saw them said they were very fine. I do not think we ever had a finer crop of potatoes; and I am sure we never had larger ones. There were few small ones amongst them.

Had the season been any way dry, I do not suppose the result would have been nearly so satisfactory. The mulching may have had some beneficial effects, though we saw no difference between the rows we mulched and the four rows right alongside of them where we did not put any of it on.

A Member.—How far apart were the rows planted in the other part of the field?

Mr. Combs.—The rows in the rest of the field were planted the ordinary width apart.

A Member.—How did the yield on the rest of the field compare with that on the half acre you weighed and tested, giving you 280 bushels?

Mr. Combs.—The yield on the rest of the field was just nothing compared with the half acre. On the sixteen acres the rate of yield was just one-half that of the one-half acre.

A Member.—What do you mean by that?

Mr. Combs.—I mean the rate of yield was just one-half the rate of yield on the one-half acre.

A Member.—That is, you mean that a half acre in the rest of the field yielded only half as much as the half acre you tested?

Mr. Combs.—I mean the rate of yield was only about half as good

as the half acre tested. They only turned out one-half as many potatoes.

Mr. Taylor.—Mr. President, I move we adjourn until to-morrow morning at ten o'clock.

On motion, the meeting adjourned until 10 A. M., February 4th.

MORNING SESSION, FEBRUARY 4TH, 1885.

Meeting called to order at 10 A. M. by the Chair.

A Member.—Mr. President, I have here a resolution which I wish to present :

Resolved, That members of any agricultural or horticultural societies in this State be eligible to hold office in this Board.

The Chair.—This motion, as I understand it, is intended to give representation to all the different societies, granges and boards in the State, and to remedy the present arrangement, which restricts the members in their eligibility to hold office, &c., in the State Board.

We have an act at present entitled "An act to organize and establish a State Board of Agriculture," approved April 22d, 1884.

This act says that there shall be two directors appointed to hold office for two years.

The change we propose to make will widen this greatly, and make the members eligible to hold any office in this State Board.

The change proposed is that the State Board of Agriculture shall have the right and power to elect their officers and committees either from among the directors or from among the members of the Board.

A Member.—I think this act should provide that all members of the State Board of Agriculture should be eligible to office in it.

The second section of this remedies this difficulty and makes them all eligible to office.

Mr. Rogers.—I move an amendment, Mr. President, that the State Granges, State Horticultural and State Agricultural Societies be entitled to two members, to put them on the same standing with the other societies.

Mr. Thompson.—Inasmuch as it is now thrown open so that any member of the State Board may be eligible, and if its powers are as wide as you say, why do you want to make any change ?

The Chair.—You do not appear to understand the question fully. Understand there is now one person selected from all these societies who shall be a director. We propose to enlarge this, and have double the number of directors. Then the act, as I have already explained to you, makes these directors members of the State Board of Agriculture.

The present act also prevents them from holding office. We propose to remedy that also. We also want to enlarge the powers of the directors.

Mr. Burrough.—I desire to state that all this is done for the purpose of perfecting the organization of all the farmers of the State. It is necessary for us to have some kind of organization.

It is for this purpose that we have attempted to organize county boards of agriculture in this State.

We have kept the organization as it now stands, but we wish to change it for the benefit of the farmers throughout the State.

If we increase this representation, we will then have forty-two members, when all the counties are organized, besides the thirteen now provided for by law. I make these statements in order that you may act intelligently on this question.

On motion, the amendment adopted.

The Chair.—I think there was another committee appointed, in regard to some action to be taken to remedy the trouble with the English sparrow.

This committee have prepared an act to present to the Legislature, which act was indorsed by the Board unanimously, in substance to give permission for the destruction of the English sparrow.*

The object and purport of that act is to place the English sparrow outside the protective law of the State for insectivorous birds. That is, to allow any one to kill the English sparrow who wants to.

The Secretary—I was once told that where a bird simply takes ripe fruit we need not kill it. If this were all the English sparrow did, there would not be so much objection to it.

Last year this little pest actually picked the buds from the currant bushes, almost destroying the crop. Not only this, but they also picked the center out of the blossom of the pear buds.

In my orchard, which is a large one, I found they did great damage, last year.

I certainly think the Central Park Commissioners made a great

* This act is now a law.

mistake when they brought these birds over here from England, where they are considered pests and nuisances.

Mr. Thompson.—I heartily indorse the Secretary's words, and would make it even stronger than that.

I was a member of Councils when that act was passed, and am only sorry we did not go further.

I think the fable, told us by the President, about the cats and the rats, is a good one, and very nicely applicable in this case.

We must try to get bills passed for our protection by the Legislature. We must try to get in an amendment. We must try to put bells on them, but we must be careful not to ring the bells too loud. Let us put a price on the heads of the English sparrow. That is the way to get rid of them. Let us try to have a bill passed which will do this, and we will then be able to exterminate them, and not before. Still, simple protection has never protected. I will tell you how I managed it.

I never allowed them to get a hold on my barn. As soon as they came to my barn I shot them, without regard to your protective or restrictive laws. While my neighbors' barns were full of them, I would not allow them to get a hold or make a home on mine. I applied the gun.

Mr. Rogers.—I cannot altogether agree with the gentleman who has just spoken. Any law which puts a price on the head of the sparrow makes it necessary to have officers to pay that price, and thus complications begin to arise. Besides this, I do not think it is at all necessary. Only let the boys know they can shoot them, and you will soon get rid of them. Only let the boys of the land know there is no more protection for these pests, these English sparrows, and they will soon become less troublesome.

Mr. Dye.—Buy the boys some powder and shot, and you will soon get rid of the birds. It is very evident that the "sparrow must go." We do not want to put a price on their heads, however, to make them go. We do not care to pay for killing the birds of other States. The Pennsylvania line is right over here, and we will have to pay for killing their birds, too.

On motion, the resolution was passed.

Mr. Rogers.—We have upon the statute book of this State, at the present time, a law for the protection of the fruit of the farmer against those trespassers who see fit to help themselves.

This law does not appear to be in the proper shape. We want to give the farmer more power than he now has, for the protection of his fruit orchards.

A case arose in our township some time ago, in which the owner of an orchard, who found a boy stealing his fruit, arrested the boy himself, and took him before a Justice of the Peace. This action on his part led to a great deal of trouble. The friends of the boy raised a great disturbance about it.

The law in such cases provides for an imprisonment of three months, or a fine, or both, at the discretion of the Court.

I think this law should go further, and allow the owner to arrest the offender himself, and take the culprit before a Justice of the Peace.

I therefore move you, sir, to have the owner whose premises are invaded given the power by law to act as his own constable, and take the offender before the Justice of the Peace, in every case.

The Chair.—I presume the gentleman understands something about the law of this State?

Mr. Rogers.—Yes, sir.

The Chair.—My understanding of the English law is, that you have a perfect right to arrest any one found trespassing on your property. The man who steals your fruit is just as amenable to the law as the man who would steal anything else from you.

You must, of course, take the responsibility of knowing what a crime is, and what is not a crime. Any man who invades your premises is committing a crime against you, and you have a right to take him before a magistrate. The fruit you raise is just as much your property as your horse, or watch, or money would be.

Mr. Rogers.—As I understand the laws of the State of New Jersey, there are scarcely two townships in this State governed by the same organic law. This is especially the case with us in our county.

In Essex county, we have no less than fourteen of these different laws. Now, how is a man to know what to do? In this way some trouble is sure to arise. I do not understand why the same offense in one place is punished by a fine, and in another place by imprisonment.

The Chair.—With due deference to the gentleman who has just spoken, he can do this. If he finds any one on his place who has no business there, he can arrest him. The New Jersey laws give him that right. The fruit a man raises is just as much his property as the clothes he wears, and the man who steals either commits a crime.

Mr. Rogers.—I will withdraw my motion, sir, and will present it at another time.

Mr. Burrough.—The Committee on Credentials desire to make the following report of the delegates present at the twelfth annual meeting of the New Jersey State Board of Agriculture :

DELEGATE.	SOCIETY.
HON. THOS. H. DUDLEY....	New Jersey State Agricultural Society.
THEO. F. BAKER	New Jersey State Horticultural Society.
J. H. M. COOK.....	New Jersey Bee Keepers' Association.
RICHMAN COLES.....	New Jersey State Grange, Patrons of Husbandry.
GEO. H. COOK.....	New Jersey State Agricultural College.
JOHN DE MOTT.....	New Jersey State Agricultural College.
WILLIAM PARRY..	New Jersey Geological Survey.
CHARLES E. ELMER.....	New Jersey Geological Survey.
ISAAC M. SMAILEY	New Jersey Experimental Station.
WM. S. TAYLOR.....	New Jersey Experimental Station.
HENRY I. BUDD.....	Burlington County Board of Agriculture.
EDWARD BURROUGH.....	Camden County Board of Agriculture.
W. O. GARRISON.....	Cumberland County Board of Agriculture.
P. T. QUINN....	Essex County Board of Agriculture.
W. E. SCHOCK.....	Gloucester County Board of Agriculture.
F. S. HOLCOMBE.....	Hunterdon County Board of Agriculture.
FRANKLIN DYE	Mercer County Board of Agriculture.
GEO. W. THOMPSON.....	Middlesex County Board of Agriculture.
D. D. DENISE	Monmouth County Board of Agriculture.
JOHN W. DICKENSON.....	Salem County Board of Agriculture.
WM. S. POTTER	Somerset County Board of Agriculture.
FRANK HOSINGER	Union County Board of Agriculture.

E. BURROUGH,
D. D. DENISE,
J. H. M. COOK, } *Committee.*

TRENTON, February 4th, 1885.

On motion, the report of the committee was accepted.

The Chair.—We will now go on with the programme.

The next in order is "The Diseases of Animals," a paper by Dr. Salmon. I am sorry to say that Dr. Salmon cannot be with us, as he was called to the West, but he has sent in his place Dr. Hopkins, who is the State Veterinary Surgeon of Wyoming Territory. . It affords me great pleasure to introduce to you Dr. Hopkins. [Dr. Hopkins' essay will be found elsewhere in the report.]

After the reading of the address, the following discussion was held :

Mr. Foreythe.—I have been very much interested in the remarks just made by the gentleman from Wyoming Territory, and would like to ask him one question upon one part of his subject. It is this:

I understand that the disease at present prevailing among the swine in some portions of this State, and in other States, does not come within the sanitary laws of the State, or under the control of the Board of Health of the State, and, consequently, the Board of Health will take no notice of it at all. Last Fall, when the disease broke out in my section of the country, I made it my business to go around among the farmers and see what could be done to remedy the evil. It was finally decided, by my own option mainly, to write to the Board of Health. I wrote to Dr. Hunt, who is a member of our State Board of Health, but got no reply from him. The veterinary surgeons tell me the Board of Health has nothing to do with this disease, as it does not come under the laws. Now, what we want to know is whether or not this disease does come under the laws governing the Board of Health?

Dr. Hopkins.—I am not familiar with the laws of the State of New Jersey. I am from Wyoming Territory. Dr. Hunt is here, and he will, no doubt, answer your questions.

Some three years ago, before I went West, a friend of mine had a lot of corn which had spoiled. He determined to go to New York and buy a lot of hogs and feed this corn to them. He went to New York and purchased twenty-four head of Western swine. He brought them home, and, after a few days, they began to die, and continued to die at the rate of two or three a day.

Mr. Forsythe.—This disease is not the hog cholera. I notified Dr. Hunt, of the Board of Health of the State of New Jersey, in regard to it, and wanted to have him come and see them, or send some one to examine them, but he never paid any attention to my request. I never even heard a word from him. No, the State Board of Health of New Jersey left us to our fate. They would not pay any attention to us. I think every State should have sanitary laws, and should see that they are rigidly enforced. No State can get along without these laws. They must have them.

This past year has been one of great excitement in all cattle and swine-growing districts. You all remember the cry that was raised in Kansas only a year ago. The trouble there was with the foot and mouth disease. The people did everything to prevent the spread of

this disease. They even blockaded the roads. Travel was impeded and everything was done to remedy this evil. It cost the State over \$1,000,000.

Under the laws of the State all animals infected with this disease had to be killed, and a great many of the breeders lost nearly all their herds in that State. The cattle raising in that State was at a standstill. No sales could be made. Every one was afraid to buy cattle from that State. Many sales were advertised, but nobody would have their cattle. All this might have been avoided. They had no State Board of Health. Had there been such a board there to make an investigation, all this panic might have been prevented.

The Chair.—We have here with us Dr. Hunt, of the New Jersey State Board of Health. I have no doubt he would be glad to talk to you.

Dr. Hunt.—I would like to hear the other paper first. I think my remarks will come in better afterwards.

The Chair.—The next thing on the programme is a paper, which was to have followed that of Dr. Salmon, by Dr. W. B. E. Miller, of Camden county. I take great pleasure in introducing him to you.

Dr. Miller.—I hardly think my paper will come in appropriately upon the subject of the swine plague.

The Chair.—Let us hear it and discuss it first.

Dr. Miller.—I am placed in a very embarrassing position, and trust you will bear with me. I had a mutual understanding with Dr. Salmon of the department, in which I was to play second fiddle to him.

By this mutual understanding with Dr. Salmon, he was to have taken the aggressive, and I was to present a paper to the Board subsequent to his. By his unavoidable absence this plan has been upset, and my paper will not come in right. I feel my responsibility, I assure you. It has reduced me to the necessity of reading to you a paper I have already read before the Camden County Agricultural Society, and with which some of the members here present are, no doubt, familiar, from having heard it there, but, as it treats on the diseases of domestic animals, it may be of interest to some of you. I will touch only on those diseases which we have in our own State, and will leave the discussion bring out the variety of these diseases.

The Chair.—I think the Board will be glad to hear anything you may have to say on this subject. The matter you refer to is one of

the greatest importance, not only to the farmers of this State, but to those of other States also.

Dr. Miller.—There will be but very little in my paper on the subject of hog cholera. This is a subject to which we have given very little attention, as you will see if you listen to the paper.

I will merely touch upon the diseases which we have with us in this State, and will leave the others, with their different varieties, to be brought out by the discussion. [Dr. Miller's paper is printed in full in the report.]

Mr. Burrough.—I think we are peculiarly favored this morning in having with us those who are so well able to give us information on this subject, of so much interest to us all, not only in this but in other States. Besides these gentlemen, I notice we have with us the executive officer of the New Jersey State Board of Health. He has placed himself way back there, in such a position as not to be seen. It looks as though he were trying to hide himself from observation.

Mr. President, I would like to ask the members, and the gentlemen here present, to tell me the best method of disinfecting my stables, where I have had this hog cholera among my hogs. I have suffered considerably from the ravages of this disease among my hogs, and would like to know how to disinfect my pens so it will be safe to use them again. The disease slaughtered all my swine but one. This one also had the disease, but appears to have recovered, and is now apparently in good health. Where I have heretofore kept hogs I am now keeping sheep.

I have been told by my friends that if I whitewash my pens it will thoroughly disinfect them, and that it will overcome this disease. I have been thinking, perhaps, that after the whitewash scaled off the germs would be released, and the disease might begin again, and be as virulent as ever.

They tell us, in one of their circulars, that the freezing of these germs does not destroy them. I would very much like to know what will kill them, or how to disinfect my pens properly.

The Chair.—I think Dr. Hunt will be able to answer that question for us.

Dr. Hunt.—I am always glad to appear before the farmers of New Jersey. In listening to the remarks already made here, I flattered myself I would not be expected to say much. I still hope I may only be expected to answer such questions as may be asked in regard to the subject which is now before us.

In regard to the duties of the State Board of Health, perhaps I may call the attention of Mr. Burrough, who was the original drafter of the bill, to some portions of it.

The original design of the bill was only relating to those diseases which may be considered foreign. The law appears to take a very different view of those diseases which are contagious.

For instance, we have on the statute book a law relating to glanders. This disease not only applies to the horse but to human beings as well. However unfortunate it may seem to farmers of this and other States, as soon as this disease appears the horse must be killed immediately, to prevent its spreading among other horses. The disease is fatal not only to the horse, but may also be contracted by human beings, to whom it proves as fatal as to the horse. In regard to having the State pay for the loss of cattle by pleuro-pneumonia, this disease must be classed as a nuisance, and the State should not be called on to pay therefor.

The law, as I understand it, is only intended to apply to those diseases which may be termed foreign. So far as my experience with these diseases is concerned, I think the farmers should receive remuneration for cattle they may lose.

The loss to farmers in this State during the past year from these diseases may be counted by the thousand of dollars' worth—not by one, but by the tens of thousands of dollars' worth.

I do not believe \$250,000 would have paid for those lost in this State alone.

It will be well to consider carefully all the features of the case before we ask the Legislature to pass a bill which will require the State to pay for losses to cattle and swine from these contagious diseases. We must remember that it is the taxpayer who has this to pay, and careful thought should be given this subject before it is decided to ask the passage of such a bill.

The farmers in this section prefer to have the law left just as it is.

I am not here to suggest legislation, however, and merely make these suggestions with a view to inviting discussion. I lay the matter before you, and leave it in your hands.

Mr. Burrough has referred to an article in our annual report, on page 20, in regard to methods of disinfecting. I wish I could induce you all to read these volumes. You will find much in them that will be of interest to you, and they should be read by every farmer. There

have been volumes upon volumes published upon this subject and you should inspect them carefully.

We have scarcely issued a circular in which we have not called attention to it. The disease is still very bad, and reports show that it has not left the counties where it first started.

The Board of Health of the State does all in its power to aid the farmers with their troubles, and the State appropriates \$5,000 to pay the expense of the Board, but they never pay but \$1,000 if it can be helped, the other \$4,000 being appropriated merely in case of a contingency. If more than the first \$1,000 is asked for, the greatest trouble is experienced in procuring it, as it is hedged around with precautions, and dealt out with the greatest care.

It is admitted and recognized that there is no positive remedy for this hog cholera, and yet it is admitted and recognized that there is a means of limitation, and those means have been spoken of and published by this Board in their circulars.

In regard to the letter Mr. Forsythe says he wrote me, every letter was answered, as far as I know. We have carefully attended to this work, so far as we were able to do so, and in the case of this gentleman, upon making inquiry, I found the expense of visiting the place, the hire of a physician or veterinary surgeon, the cost of carriage hire, &c., would not warrant our going, as the disease was one which did not come under the sanitary laws of the State. We answered his letter, as we have answered every letter coming to us. A visit would have cost \$50, and we must look at all these facts.

As to our attention to the hog cholera, we have given this the fullest attention, as a perusal of our pamphlet will show, where we have four pages of matter in reference to it. We have gone over the matter as thoroughly and completely as any one can do it.

So far as this swine plague goes, it is an exceedingly interesting thing to physicians. The viscelles (?) which cause this disease were first discovered by Dr. Cline. Neither the physician nor the veterinarian has ever been able to discover any cure for it. I have yet to learn of any physician or veterinarian, who is not a quack, who has ever proposed to cure this disease. We must deal with this disease as we would deal with the scarlet fever. If we cannot master it we must isolate the cases.

If every farmer in the State of New Jersey had obeyed the directions given, there would not have been near the trouble and loss.

If he had, as soon as he found the plague among his swine, taken the proper care that he should, not allow these hogs to remain with the others, had used a different swill-pail for the sick and the well hogs, and had taken other simple precautions to prevent the spread of the disease, it would not have proved so destructive to their hogs. Articles used for the sick hogs, or around them should never be used in connection with those not diseased. Each farmer should allow but one man to attend the well hogs, and he should not be allowed to go near the sick ones. If these precautions had been observed he might have saved three-fourths of his hogs. You will find this the case always. Get a good veterinarian to tell you what to do, and do it. If these measures are adopted, you will greatly decrease the fatality of this disease.

The physicians of this country are busy trying to find out what disinfectants to use in these cases. The results are, that so far but two satisfactory remedies have been found, and these are sulphur and corrosive sublimate. We are all aware that these are valuable remedies, and we all know how to apply them.

The fumes of sulphur are of but little use with swine, as they are kept in open pens; we cannot seal up their quarters in order to have the fumes take proper effect. If we take corrosive sublimate and sprinkle it around the pens carefully, I think you will find this the most important method. The use of zinc wash, and many other disinfectants, are perhaps known to you.

The reports in regard to the hog cholera show that the disease is still doing great damage among the hogs of this State.

It seems wonderful to me how it is kept out of some counties, while it does such wide-spread damage in others.

Those counties where hogs have this disease, will continue to have it, unless farmers will understand that as soon as a case of cholera appears they must isolate the case at once, and use every precaution to prevent the other hogs from catching it. You must isolate, and keep on isolating as long as the disease is around. It may be kept under in this way, and I know of no other. It is probable that it may not appear at all in some parts of the State, in out of the way places. I have experimented in this direction, long before I ever had any connection with the department, and have, since my connection, given it the fullest possible attention. With these remarks, I will now endeavor to answer the questions which have been propounded.

In my experiments with the diseases of the hog, I have always recognized the fact, that we, as physicians, could not afford to be unfamiliar with the facts in diseases of this nature.

Dr. Hopkins.—It seems exceedingly strange to me that Dr. Hunt will throw the honor of anything which may pertain to a cure of diseases which may be occasioning loss to the farmers upon the medical fraternity. It seems to me, when he talks about the curing of diseases, he goes way back. We do not come here before you to tell you that we can *cure* these diseases, or any disease. We cannot do it. Doctors cannot *cure* anything.

The means of prevention is the advanced science. It seems to me that this State is so situated that there should be no trouble in keeping out these diseases. What is the use of rigidly examining into the different methods of quarantine, when you have in the simple word "prevention," the whole thing?

There are a great many men in New Jersey who know absolutely nothing of diseases, of their prevention, or their cure. It is not their business to be familiar with these diseases. They have never given it any attention. They depend on the physician for this knowledge.

A farmer wants a certain kind of stock. He goes to market and buys what is there for sale. He knows nothing of the diseases. It is the business of the government to protect that man, and keep him from buying diseased cattle or swine. If that man has been unfortunate, and has brought disease on his place, it is the duty of the government to protect that man's neighbors, equally ignorant, perhaps, of the disease he has to contend with.

Why should any man be allowed to throw diseased animals on the market for sale? Talk about curing disease. That is the way these diseases are cured in New Jersey and in New York—they sell them to whoever will buy them, not knowing what they are buying. I have seen animals exposed for sale in the markets of the large cities, when they have been badly affected with the pleuro-pneumonia. As for hog cholera, why you will find any quantity of it in New York City, right in the markets, too. The hog market of New York is far beyond redemption. Every hog bought in the New York stock market is sure to be more or less affected with this disease, and which will probably develop and spread to the herd to which it is added.

It is necessary for every State to have stringent sanitary laws, and these laws must be rigidly enforced. If the farmer gets disease in his

herd, he should be obliged to notify the proper authorities, and to have proper penalties, where these laws are not complied with to the letter.

It is the duty of the State to place a good veterinary surgeon at the disposal of these farmers, whose duty it shall be to take such precautions as may be necessary to prevent the spread of the disease from one subject to another.

Physicians do not cure diseases. [Laughter.] Neither do the the medicines cure; we know it. Nature does the work.

It is not curing diseases that we want to consider. It is prevention. There are to-day no less than seven State legislatures considering the subject of prevention of contagious diseases among domestic animals in each State. The Territory which I have the honor to represent, does not attempt to *cure* diseases. We prevent them. No person can bring an animal into the country for breeding purposes, until he has notified the proper authorities. He is not allowed to take the animals home. He must leave them at the depot until they have been thoroughly examined. If the animal is not sound, he must be kept away from the other animals until every trace of disease has disappeared. This must be done in every case, and these animals are not allowed to mix with other cattle until we are perfectly sure that every trace of the disease has been eradicated.

This can be done in New Jersey, just as well as out in Wyoming Territory. The Board of Health has no time for this, I know. It has enough to do with its other duties. This should have the attention of a separate board, and this board should give it their undivided attention. Talk about your different methods of disinfection and curing; prevent it from coming into the State, and you will not have to cure it. [Applause.]

I think it is the duty of this Board of Agriculture to present a petition to the legislature, asking them to protect your interests as I have suggested. Something must be done to protect your animals, and this is a good plan with us in Wyoming Territory, and would be equally as good a plan in the State of New Jersey.

Our Territory pays the owner of stock which has to be killed. They pay two-thirds of the sound value of a horse which has the glanders, &c.; yet it is not possible for us to pay for the sheep and swine which have been lost by the farmers of our Territory.

You must remember that by paying for one animal, you are doing

a good work in saving the value to those farmers, of cattle that may become infected with the disease and die. Prevent it from spreading.

This is the treatment of these diseases. If we pay for the killing of one diseased animal and keep others from getting it, is this not prevention? You must not pay too high an indemnity, you put a premium on crime. If the government pays too high an indemnity, the farmer who has a lot of worthless stock which he wishes to dispose of to advantage, he knows what to do—he knows how to get rid of his poor herd of animals.

I hope this Board of Agriculture will consult the sanitary laws of other States and draw up a plan suitable for the protection of the domestic animals of the State of New Jersey.

Mr. Forsythe.—Mr. President, I think we ought to draw up some such laws as the speaker who has last spoken has suggested. We want some protection for our domestic animals, such as he suggests.

I think Dr. Hunt labors under a misapprehension, in regard to the hog cholera, all the way through. They do not know how this disease breaks out, even. They think it is introduced from the State of New York and other places. They think it is brought here from other parts of this State, or from other States, but they are entirely mistaken, Mr. President. It does not come that way, at all. I am sure it is not always the case, by any manner or means.

The first time it broke out up in our section of the country it was at Mr. Butterworth's farm, on the south side of Pemberton.

It broke out there first, and then skipped from there over to the east side of Pemberton, fully three miles from Mr. Butterworth's farm, where it began its ravages among my brother's hogs. It destroyed all the hogs he had. It went from there to his neighbor's place and destroyed all his hogs. It then seemed to disappear entirely for a while. Then it broke out again on the south side of Pemberton and extended its ravages in that section.

A Member.—Where were the hogs?

Mr. Forsythe.—Some of them were in the pens, and some of them were out in the pasture.

A Member.—Where were Mr. Butterworth's hogs kept?

Mr. Forsythe.—They were kept out in the pasture where they had plenty of grass and lime, and clear, running water. My hogs were in the next field to his, which adjoins him. As soon as I found his hogs had the disease, I immediately took my hogs away from there and

put ~~them~~ in another field on the same creek, not below them or down the stream, but up the ~~stream~~ away from them, almost half a mile off. Then it began amongst my hogs. I lost over thirty of mine.

Everybody said there was no use in doing anything, so I just let them have it all their own way, and die off as fast as they liked. [Loud laughter.] Everybody I asked, said there was nothing I could do for them, and I thought so, too. At last I got tired of letting them have it all their own way, and told my men to drive the hogs up to the house and put them in the barn-yard and keep them there. The sick pigs I isolated. I went to Pemberton and got some stuff for them, sulphur and other things, which I have used for my hogs for a long time, and fed it to them with wheat bran.

I lost no more hogs. I expect the improvement was all due to the changing them from the field to the barn-yard.

Now, what we want to know is, how did this disease ever get there? Mr. Butterworth did not buy any hogs. I know he did not get any hogs from anywhere else. How were we to prevent that disease from spreading? We may quarantine as much as we please.

How are we to protect ourselves if we don't know where the disease comes from? We can't tell where it comes from. We want you to tell us, and tell us what to do.

I was very anxious to have the assistance of our Board of Health, and every other farmer was just as anxious, but no one came to give us any assistance. I wrote to Dr. Hunt, but got no reply from him. I have thus lost a great many dollars' worth of hogs, which I can hardly afford to loose.

Some individual this Winter, wrote an article in the *Philadelphia Press*, or told a reporter of that paper, one of the meanest and most scurrilous attacks on the farmers in our vicinity, that I ever read. I think it is the meanest thing that could have been said. As soon as I read it, I wrote to the editor of the *Press* about it, and asked him to deny it, but he never did so. He said he would investigate it, and that was all there was of it.

It was the meanest, most villainous and outrageous thing, I ever saw. It affects the character of a whole community. I believe our neighbors are as honest and upright a set of people as may be found anywhere in this, or in any other State. Perhaps many of you have read the article I refer to. It says, that the story that the hog cholera is no longer prevalent in Burlington county does not seem to be true,

when we learn that the farmers around Pemberton are selling pork to dealers in Philadelphia which was diseased, and a whole lot more just like it. Why, it is outrageous—it is an insult to any community. And when I write to the editor of this paper, he says he will investigate the case.

He has never yet done us the justice to retract what he has said. The article also says that the Board of Health would not take any action for fear it would make the members of it unpopular.

Unpopular, indeed! I would like to ask the members of this Board of Health if it would have made them unpopular to have come and seen our hogs, and given us a little help?

Dr. Hunt.—I am very glad Mr. Forsythe wrote us in regard to the matter. I had a long correspondence with Dr. Dyer in regard to this matter. He wrote me it would be merely an expenditure of money needlessly by the State for us to do anything in the matter.

It was not for want of attention that Mr. Forsythe did not get a reply to his letter. We attend to these matters instantly, as far as it is in our power to do so. There was no possible good to be derived from this expenditure of money in paying a visit to this section. We had the report of the veterinary in the case, and were satisfied of this.

If you wish me to try to answer the question in regard to the spread of the disease, I will endeavor to do so. This is a question which has puzzled every one. It will sometimes go rushing along from one place to another, no one can tell how or where.

It is exactly similar to what you heard yesterday in regard to the insectivora. This is the common and universal judgment.

It is not manufactured on the spot. This is the opinion of the most experienced surgeons. It appears to be something like small spores. The disease is not evolved; there must be some single case somewhere, from which the others have spread. They are like gasses, and travel along close to the ground. If the next field has a board fence between it and the one in which the disease prevails, it is probable the disease would not go there. If there had been a board fence between your field and your neighbors', it is probable your hogs would not have taken the disease, as the board fence would, in all likelihood, have stopped these gasses.

These gasses, or germs, are very slow traveling, and for this reason a board fence might have been very effective in preventing its spreading.

Mr. Forsythe.—There was no connection between the farm of my brother and Mr. Butterworth's place. How do you account for that? There was a distance of three miles, or more, between the two places.

Dr. Hunt.—Nevertheless there might have been some connection between the two places.

Mr. Forsythe.—No, there was not. Here the *Press* says we are to blame for not notifying the Board of Health, and then goes on to say you are afraid of becoming unpopular if you come to see us. We did notify you, but you paid no attention to us, whatever.

Dr. Miller.—Did your brother, or your brother's hired men, ever go over to Mr. Butterworth's place to see the hogs after they were sick?

Mr. Forsythe.—No, sir; I think not.

Dr. Miller.—I think they did.

Mr. Forsythe.—I don't believe it. There was no interchange between the two places.

Dr. Hunt.—We have evidence in the office to show that such a visit was made.

Mr. Forsythe.—I do not believe there was any interchange of visits. They were not in the habit of visiting, at all.

Dr. Miller.—We have the evidence of this fact, however, among the records of the Board of Health.

Mr. Forsythe.—Then we have been slandered, that is all. The paper has slandered us, and some one else has been doing the same thing. This article in the *Press* is the most scurrilous article I ever did see. He publishes an article of this kind, and then refuses to publish a letter from the other side.

We apply to the Board of Health, and they give us no satisfaction, for fear it will make them *unpopular*.

Dr. Miller.—I again ask you, if your brother, or one of his hired men, did not visit the farm where the disease first broke out? The department is in possession of the knowledge, or evidence, to that effect, that your brother personally visited the farm of Mr. Butterworth after the disease broke out.

Mr. Forsythe.—I think such is not the case.

Dr. Miller.—We have evidence to that effect.

Mr. Forsythe.—I think it is not that way. I do not believe there was any visiting done by my brother. They were not in the habit of visiting each other.

Dr. Hunt.—I shall be glad to have the gentleman come around and see the Board of Health, and see just what they have been doing in the matter of giving attention to the hog cholera, and I think he will find we know a great deal more about the hog cholera than he thinks we do.

Mr. Forsythe.—Yes, sir, I suppose, and a great deal more that you *don't* know than what they *do* know.

Dr. Miller.—You spoke of putting your hogs in your barn-yard, and that they got well in there. Did you ever have any diseased hogs in there?

Mr. Forsythe.—No, sir; we have never had any in there that I know of.

Mr. Dye.—I think we have had enough hog cholera. Let us have something else.

Judge Holcombe.—One of my hogs had something like the hog cholera, but I don't think it was the regular hog disease, as it was constipated. In about two weeks it died. I had not had it penned up. I turned it out and let it run where it pleased. In a couple of weeks two of those in the pen were taken sick. They had been sick several days before I knew it. Adjoining this place we had a field where we had had sweet potatoes, and we had just dug them. I turned the well hogs out in this field, and kept the sick ones penned up in the pen. Not one of the hogs was sick that I put out there, and none of them got sick. They all remained alive.

The gentleman from Wyoming said something about the gentleman having a large lot of spoiled corn, and that he bought a lot of hogs to feed it away. Now, then, don't you think the damaged corn was the cause? That is a question worth considering. I don't have much trouble with my hogs. I give them a quarter of a pound of sulphur a day, and feed it to them right along, and when I come to kill them they are free from worms. I feed them sulphur right up to the time of killing. I do this, for one thing, on account of the worms. I throw it right into the swill barrel, and sometimes I sprinkle it in the trough. My hogs are always healthy. My chickens go to the trough and pick out of it, and they get the sulphur, too, and I have fine, healthy chickens.

Mr. D. S. Haines.—Mr. President, I would like to say a word or two. This seems to be a school for farmers. We are learning something now that we ought to have known fifty years ago. We have

here with us an Essex county gentleman, who has been all through the West. He may know something of interest to us all, and I should be pleased to hear him. He may be able to add to the words of Mr. Forsythe. I refer to Mr. Mortimer Whitehead.

The Chair.—We have no objections to hearing this gentleman, but I think we had better go on with the programme.

Mr. Dye.—I think we ought to give some show to the other papers on the programme. I call on Mr. Ebert, of Kirkwood, N. J., for his paper.

The Chair.—I have the pleasure of introducing to you Mr. Amos Ebert, of Kirkwood, N. J., who will address you on the subject of "The Farmers of New Jersey."

Mr. Ebert.—Mr. President, we have heard a great deal about hogs and other things this morning, but I am afraid, now that we come to talk about the farmers themselves, they do not care to listen. While the hog question was up they could listen very attentively, but now that the farmer question is up they do not seem to be so much interested. [Mr. Ebert read an essay on "The Farmer," which will be found in the report.]

The Chair.—The next thing in order is the report of the Committee on Nomination of Officers, and the election of officers. Is that committee ready to report?

Judge Parry.—It is.

REPORT OF NOMINATION COMMITTEE.

The committee to nominate permanent officers of the Board for the ensuing year, respectfully report the following:

OFFICERS FOR 1885.

PRESIDENT.

Hon. THOS. H. DUDLEY..Camden, Camden county.

VICE PRESIDENT.

THOS. T. KINNEY..Newark, Essex county.

SECRETARY.

P. T. QUINN.....Newark, Essex county.

TREASURER.

WM. S. TAYLOR.....Burlington, Burlington county.

EXECUTIVE COMMITTEE.

EDWARD BURROUGH.....Merchantville, Camden county.
 Prof. GEO. H. COOK.....New Brunswick, Middlesex county.
 D. D. DENISE.....Freehold, Monmouth county.

CHEMIST OF THE BOARD.

Prof. ARTHUR T. NEALE.....New Brunswick, Middlesex county.

THOS. T. KINNEY, }
 WILLIAM PARRY, } *Committee.*
 JOHN DE MOTT, }

The Chair.—You have heard the report of the Nominating Committee. Shall the report of that committee be adopted?

A Member.—I move the adoption of the report, as read.

Mr. Thompson.—The question is now before the meeting, I believe. While I have the highest respect for the work of the Nominating Committee, and for the officers named therein, and also for the work they have done for the State Board of Agriculture in the past, I would submit, sir, as an amendment to the report of the Nominating Committee, that Judge Parry, of Cinnaminson, be the nominee for President of this State Board of Agriculture.

Judge Parry.—I respectfully decline the nomination.

On motion, the report was then accepted.

The Secretary.—I move you, sir, that we now adjourn until half-past two this afternoon. It will be impossible for us to get our dinners and get back here by two o'clock. We can then get through with the programme, and have the other papers mentioned there.

The Chair.—The Board is adjourned until half-past two o'clock.

 AFTERNOON SESSION.

Meeting called to order at 2:30 P. M., by the Chair.

The Chair.—I believe there was a committee appointed to pass on the exhibits here on the tables. Is that committee ready to report?

REPORT OF THE COMMITTEE ON EXHIBITS.

The committee appointed to report on the exhibition of all articles on the tables at this meeting of the State Board of Agriculture, would respectfully report that they find :

F. S. Holcombe, of Lambertville, exhibits a very fine and clean specimen of clover seed ; also, timothy seed worthy of high commendation. Both these deserve the special mention of this committee.

The same person also exhibits Schoenan oats seed, from the Agricultural Department, Washington ; a good sample of oats raised in this State ; Waterloo oats, very heavy and fine ; Mediterranean wheat, unusually clean and plump ; a sample of so-called hybrid wheat, claimed to be a cross between Tushan Island and Dodd wheat, said by the millers who have ground it to be a superior article. Your committee do not profess to be sufficiently versed in hybrids to determine the character of this.

Mr. Holcombe shows twelve ears eight-rowed yellow, and the same number of ears of Improved Woodhull corn.

The sample of Russian wheat exhibited by this person, though a fine growth, is entirely unsuited to our climate.

The walnuts, White Pippin, Cider Apple, Carvel's Red, Rigley, Nero, Doctor, Sheep Nose, Jonathan and Higgings' apples, deserve notice as to their fine looks, as well as quality.

S. C. DeCou, Moorestown, four varieties of apples, namely : Fallawater, York Imperial, Roman Stem and Baldwin, all of which are fine of their respective kinds.

Robert C. Johnson, Hamilton, Mercer county, Cooper Redling apples ; choice specimens.

F. Dye, Trenton, fine specimen of corn, mixed varieties ; also, Rice wheat. Unusually fine specimens.

Rev. W. W. Meech, Vineland, Meech's Prolific quince, in glass jars ; good specimens.

D. Augs. Vanderveer, Manalapan, samples of Queen of the Prairie corn. Sixty-four pounds in ear will make fifty-six pounds of shelled corn ; very small cob, with deep grain.

William H. Cadwallader, of Ewing, Mercer county, two varieties of corn, Cloud's Dent and Leaming ; fine specimens of the varieties.

Your committee would impress upon all engaged in agricultural pursuits in the State of New Jersey, the importance of exhibiting on the tables at these annual meetings, many and full samples of all the products of the State. It is an old saying, by their fruits men shall be known. Is this exhibition a fair representation of the products of the soil of New Jersey ? The articles on exhibition are meritorious, but so few in number.

In relation to the investigation into the relative merits of French labor-saving machines in comparison with those of the United States, your committee would report that the time has been so short, no adequate justice could be done to this subject. The casual examination made would indicate a great increase in the price of all French implements over those of American manufacture, fully double, as a general rule.

Your committee fully concur in the remarks made by the worthy President as to the advisability of duly qualified persons being commissioned to visit foreign countries, to compare our culture, machines, seeds and methods, with theirs, and think that the results coming therefrom would advance American agriculture.

I. W. NICHOLSON, }
JOSHUA FORSYTH, } *Committee.*
JESSE B. ROGERS, }

Mr. Burrough.—You have all heard the report of the committee on the samples brought before us. I wish to state to the Board that, in collecting articles for the New Orleans Exposition, we were astonished at the samples presented to us for exhibition.

I think if the members of this Board would bring more of their samples to this meeting for exhibition, there would be much more interest shown. If samples of vegetables were placed here on the different tables for examination, there would be something here to interest every one. I notice that there has been a great deal of interest exhibited in the samples here on the tables. The ears of corn have been broken in two, and the cob, size and depth of grain and other features carefully examined.

This all goes to show that some one was interested in these articles. We should have samples here of the different products of all the counties. There are many new varieties of potatoes being introduced, and samples of all these different kinds should be placed here on our tables for examination. It is just as important for us to know what the farmers are growing, as for us to know how they are growing them. We have many of us found that some of the so-called new and early varieties of potatoes are, in reality, entirely worthless to us. These are all points that we should know. If such samples of the various products can be brought here, we will have the tables covered. Let us all see what we can do another year in this direction. Let

every one bring something, and we will have an interesting and instructive display.

If we can do this, the committee on the examination of these articles will have something worth examining, and something worth reporting.

A Member.—Mr. President, I think I can give a reason why there are not more exhibits here. If you will look on the back of the programmes you will see that the Secretary, in inviting us to come, says there, “an exhibition of fruits, grains, nuts and other farm products will be held, and *delegates* are requested to bring samples of products grown in their county.” Delegates, you see. I saw this, and thought it was only the delegates who were expected to bring exhibits, and I know there were others who thought the same thing. I had intended to bring some stuff with me for exhibition, but did not bring them when I saw that. I had a dozen ears of corn that I got together to bring here. I can’t say anything of their excellence, and I do not know how they would have compared with the others here, but I would have brought them had I not thought delegates were the only ones requested to bring samples. I think this is the reason why no one else has samples here.

The Chair.—The members of every agricultural association in this State are members of this Board, and I hope there will be no further misunderstanding.

In the bill which has already been placed before the Legislature, every member of an agricultural association in this State is eligible, not only to membership in the State Board of Agriculture, but is also eligible to hold any position connected with it.

I trust that next year, exhibits of all the farm products will be brought to the Board meeting. There is a great deal to be said in favor of this. One point is the interchange of products of different portions of the State. There is no doubt but that the productions of one portion of the State may be introduced to advantage in another portion. Let us then have a full representation of farm products here next year.

Judge Holcombe.—I agree with the Chair in the remarks just made. There is no doubt about the advisability of this exhibition of our farm products.

On motion the report was accepted.

Dr. Hunt.—I want to call the attention of the members of this

Board to the circulars and books which have been placed on the tables for your inspection. They are the results of four or five years' study on the subjects of which they treat. They are at the disposal of all the societies. If any of the societies are not supplied, I shall be glad to furnish you with copies.

I would also say, that in the course of ten days there will be issued the first report of the Bureau of Animal Industry.

It is much fuller and more complete than anything of the kind yet attempted. If the gentlemen here present wish to have copies and will send me their names, I will see that they are supplied.

Mr. I. S. Crane, Essex Co.—I would like to make a motion, if in order. I have been appointed one of a committee of three, by the Essex County farmers, to oppose the bill now before the State Legislature, No. 5, in regard to barbed wire fencing.

We also advocate the passage of a bill which will make a barbed wire boundary fence a legal partition, so that when a neighbor's stock may be damaged by this kind of fencing no claim for damages can be brought. I do not know whether there is such a law in this State, but I know they have such a law in some of the other States.

I move you, sir, that the Committee on Legislation be instructed to oppose the passage of the present bill before the Legislature and advocate the passage of the bill I have suggested.

Motion seconded and carried.

The Chair.—The first piece on the programme is an essay on "Market Gardening," by Mr. Theo. F. Baker, of Cumberland county. Is the gentleman in the room?

Mr. Baker.—Mr. President and gentleman :

The Chair.—I have the pleasure of introducing to you Mr. Theo. F. Baker, of Cumberland county, who will address you on the subject of "Market Gardening."

[Mr. Baker's paper will be found among the essays.]

While the paper was being read Mr. Burrough, referring to the statement that Mr. Baker made furrows two feet wide, said :

Mr. Burrough.—I think you have made a mistake there in regard to the width of the furrows you say you made. Did you make them two feet wide?

Mr. Baker.—Yes, sir ; I made them two feet wide by setting the discs of the harrow so they revolved outward.

The Chair.—The next on the programme is the question of Fertil-

izers, by Prof. George H. Cook, of New Brunswick. I take pleasure in introducing the gentleman to you, though it is hardly worth while to do so, as you all know him so well that any introduction is unnecessary.

PROFESSOR COOK'S ADDRESS.

Prof. Cook.—Our friend, the Secretary, I think has put me on here just for the purpose of saying something in regard to those interests in which we are all involved, and to introduce some other persons here to say something to you.

I would like to say something in regard to some of the agricultural talks we had here just before noon to-day, and notice some of the remarks which were made.

I wish to refer to our College. While I am greatly interested in this, we have with us Judge Parry, who is also interested in the matter. There are also a number of others here who are representatives of the farmers of the State, and they come regularly to see whether the trustees are carrying out their part of the contract with the State. There are also a number of others here who have been to see us. Mr. Dudley has been a member of the Board, and a good one. So has Mr. Kinney. There are your representatives. If there is anything wrong you have your resort in them, and have only to make your wants known to them. The College is ready to do what was required of it at the outset.

We are trying to do a good work there for the farmers of this State, and we think we are doing it. We try to teach farming—not the common branch, but the higher branches, as we may say. We teach Chemistry and Natural Philosophy, and what is not taught in other Colleges in the State. We do not think it is our business to teach agriculture, but we do think it is right to teach the branches mentioned.

I will also say a few words in regard to our Experiment Station, a subject in which I think you are all interested.

We are ready to make a report this year, which will be printed and sent out, and which I hope you will all be able to see. I say "I hope," because we have a little trouble sometimes in sending out these pamphlets, on account of the post office addresses not being correct, or something of that kind. Sometimes persons ask for them and do not give us their names, and sometimes they give us the name or address wrong, and they never get the pamphlet.

I would only say to all those who may want them, or would like to have them, to write down their names and send them in, and we will see that they get a copy. If you do not get your copy, write to us direct to the Experiment Station at New Brunswick, and we will see that the error is corrected.

We have also sent out a large number of bulletins this year; not so many as usual, but a great deal more in them.

We are trying the different fertilizers, by putting one beside the other and making a comparison. This is our reason for being a little slower in sending out these books than we have been before.

This matter of fertilizers is beginning to be a very important one in our State, and the interest in them is growing very rapidly. Last year we published a statement showing the amount of fertilizers consumed in New Jersey. There was over \$1,000,000 worth used in this State alone. This year we will show an increase of about twenty per cent. I have not the figures here with me, but I think that is about it. I think the quantity will be somewhat greater this year, as the prices paid are not so high.

We worked last summer on two acres of corn—one acre planted in the ordinary way, and the other planted with a view to making ensilage. We used the same fertilizer, worked the corn the same, and did everything as nearly alike as we possibly could.

We have prepared the material and have gone on and analyzed it, both the corn stalks and the ensilage, and have fed part of it to the cattle, to see if the result corresponded with the analysis.

A comparison of the results will be given in the report, and our friends can see for themselves which is the best method.

We do not find that the results warrant the supposition that ensilage is any better than the ordinary method, provided the farmers will use up the stalks as closely as they use the ensilage, and will take the same amount of trouble to prepare it for the consumption of their cattle. The report will settle the question in one direction, but will, perhaps, leave the other in such a way that you will have to judge for yourselves.

I think this a most important series of experiments, and one in which you are all interested. The report will go over this very fully in all list details, and I trust that every farmer will procure a copy and examine it carefully.

In connection with the use of fertilizers, I wish to say a few words.

Last season there were brought to the State Fair some very fine potatoes. They were, indeed, the finest that appeared there. It led to the inquiry where they came from, and the statement was made that they came from Long Island, and they had been raised entirely by the use of fertilizers, and not one particle of manure was used on the ground in connection with the fertilizer.

My curiosity was aroused, and I went over to see the gentleman who had raised them and to see the ground on which they were raised. I also wished to know something about the methods employed in their production. I found the gentleman at his home, and I also found him very willing to show me around over his place.

He explained to me the methods he had used and showed me everything without reserve, and I can vouch for his statements in every respect. I saw some of the products of his market garden and they were, indeed, very fine, and all raised with fertilizers only. Thinking these methods might be of interest to you, I have taken the liberty of asking Mr. Schoonmaker, the gentlemen referred to, to come here and make a statement of how he does this work.

I will ask him to come forward. I take pleasure in introducing Mr. Schoonmaker, of Long Island, who will tell you how he does his work.

Mr. Schoonmaker.—I am no speech maker. I never made a speech in my life. I was asked to come here and tell you how I manage and I have come. I have not such a very large farm.

The Chair.—How many acres?

Mr. Schoonmaker.—Forty acres. I will try to tell you how it all came about. Six years ago we fell short of stable manure and did not know what to do. I had heard of these fertilizers. We did not know anything about them. I went to see a friend who I had known to have used these fertilizers. I got there, and found him in a hurry to get to church. I asked him about them, but he had no time to talk. He said, "You go ahead and use them." I went home and concluded to try them. We bought two tons of the fertilizer. I put a hundred dollars in my pocket to pay for it. Thinks I to myself, that is a pretty big price to pay for a load of manure. I brought the fertilizer home and we began to use it and used it all up.

We tried stable manure right alongside of it to see how it would do. We began to plant, and after they were planted we waited for them to come up. We were sick of the whole thing at first. They

did not come up with the others. The stable manure made them come up first. The potatoes planted with the fertilizers were behind the others. We felt sick of the whole thing for awhile. When we came to harvest them, the fertilizer showed up what it would do. We got 378 bushels off the piece of land where we had used the fertilizer. They were far better than those planted in stable manure. We felt pretty well satisfied with the fertilizer, I tell you.

Next year we thought we would go into it heavier. We tried eight acres with fertilizer. The results were the same. The next year we tried the whole crop, except one acre. We must try one acre of stable manure alongside, you know, to see how the fertilizer did. We could not stop using stable manure, you know.

Well, we were satisfied, and from that time we have never carted a single load of stable manure, and that is three years ago.

Well, I had two acres of cabbages. I am sorry you could not see them. I will tell you about them. I never saw anything like them. Our wagons hold forty-two bushel baskets. All the cabbage we could get on those wagons was 325 heads, and a load like that weighed 1,800 pounds.

A Member.—1,800 pounds of cabbage?

Mr. Schoonmaker.—1,800 pounds of cabbage. We cut this cabbage clean as we went. We used to have to go over the piece two or three times before we got them all off, but this time we cut them clean as we went. We cut every head. I never saw anything like them.

We wanted to put out some tomatoes. We went down to the factory, and got three or four bags of fertilizer to put on them. Our tomatoes were late. The neighbors' crops were way ahead of ours. They were way up before we planted ours. Our neighbors did not take any stock in the fertilizers. These Long Island Dutchmen are very thick-headed, you know. [Laughter.] They said, "You keep on buying fertilizer, and you will soon get to the poor-house." I said, "All right; it's big enough, and not very far off. There is plenty of room there for me, and I will not have far to go. There is a very good one right near me."

I got one of them to try a small patch with fertilizer. The next year he tried some more. But he tried the manure right alongside of it; could not do without trying the manure, you know. He was well satisfied with the result. He got \$3.50 a barrel for his fertilizer-raised potatoes, and he could not get near that for the manure-raised

crop. If we used manure, we could hardly get anything for them. The fertilizer-raised crops always brought the most.

Another friend of mine wanted to plant potatoes, and he planted them with fertilizer, except he must try a part of the patch with manure. Must always try a little of the manure, you know. [Laughter.] The consequence was the same as with the others who tried the fertilizer and the manure—the fertilizer was way ahead. The stable manure was no good. The fertilizers were the best.

The Chair.—What kinds of fertilizers?

Mr. Schoonmaker.—Forrestors' and Mapes'.

Now, about the lasting qualities of this fertilizer. My brother-in-law lives very near Long Island City. He has a forty-acre lot, and concluded to try some fertilizer. He bought \$50 worth of fertilizer, to try it. He put it on a patch, and right alongside of it he put on stable manure, worth twice as much in money value or cost. I told him I did not think it was a fair shake to put on \$50 worth of fertilizer, and expect it to do as well as \$100 worth of manure. He tried it, and he was satisfied. The potatoes on the stable manure came up first, and he felt afraid about the fertilizer. You know the stable manure will make them come up first, every time. They did not come up as fast with the fertilizer as with the manure, and he felt discouraged, and thought he had made a bad hit. They pitched in, and beat them in the end, though, I tell you. Why the \$50 worth of fertilizer beat the \$100 worth of manure. He got enough more potatoes off the patch planted with the fertilizer to pay for all he bought, besides making more off the crop.

I will now try to tell you about the wheat. Wheat was sown on the patch the next summer. I never saw a prettier crop of wheat. The fall and the next spring grass came. When he came to cut the grass off the patch where he had put the fertilizer, I thought the difference was in favor of that patch, as against the patch where manure had been put on. Last year he cut it again, and got a good crop off it. Now, there was four years with \$50 worth of fertilizer, and no manure at all. I think that shows that the lasting qualities of the fertilizer are good.

Nine years ago, Mr. Berry had those horse-car stables. He paid for them at the rate of \$9 a horse. To-day he is paying thirty shillings a horse. To-day we can buy good stable manure for fifty cents a load, and no takers at that.

We had a cow dairy of forty cows for twenty-five years. About four years ago, after we got to using this fertilizer, we went to a neighbor and asked him what we should do with the manure from this dairy. We said we had no use for it, as we were using the fertilizer altogether now. We don't want it. He said, "I don't know what you can do."

There are to-day 200 loads of as fine cow manure as ever was, which cannot be sold for any price.

Members.—Where is it? Where is it?

Prof. Cook.—This is true. Yes, sir; I saw it myself. [Applause, and cries of "Where is it?"]

The Chair.—We have some South Jersey farmers here who would be very glad to have it.

Mr. Forsythe.—Yes, sir; and that very manure is being shipped right down here to Camden county, plenty of it. Our farmers are buying it right along.

Mr. Schoonmaker.—A few years ago, we used to see whole train loads, three or four of them a day, sometimes, come down the Long Island Railroad for the farmers, loaded with this manure from New York City, and now we never see any of it. These fertilizers are all giving us satisfaction, and we don't want the manure any more. They are giving us too much production; that is where the trouble is.

It reminds me of the story of the farmer, who said to his son that the time would soon come when you could put your hand in your pocket, and pull out enough fertilizer to raise a whole crop. "Yes," says the son, "and you can put the crop in the other pocket."

Gentlemen, I have nothing more to say, but this: The fertilizers are spoiling our market. They give us too much production. That is all the trouble.

The Chair.—What variety of potatoes did you raise?

Mr. Schoonmaker.—Early Rose.

A Member.—What kind of cabbage?

Mr. Schoonmaker.—Early Flat Dutch and Big Flat Dutch.

A Member.—What kind of manure or fertilizer did you say you used?

Mr. Schoonmaker.—The fertilizers were the kinds specially adapted to each of the crops.

A Member.—You used Forrester's on the cabbage?

Mr. Schoonmaker.—Yes, sir. A friend of mine was going to give

up farming because it did not pay. I asked him why he did not use fertilizers. He did not believe in them, but he tried them, and I saw him two weeks ago and he said to me, "You have been the making of me."

The Chair.—How do you apply these fertilizers—in the hill, in the furrow or broadcast?

Mr. Schoonmaker.—In the hill.

The Chair.—How much to the acre?

Mr. Schoonmaker.—Last year we put on a half a ton to the acre.

The Chair.—How much did it cost you?

Mr. Schoonmaker.—It cost me \$48 a ton last year. That would be \$24 an acre.

A member.—I suppose this land was full of manure?

Mr. Schoonmaker.—Yes, sir. But I don't think that makes much difference. A friend of mine had a wagon road running across his land that had been used by teams until it was as hard as it could be, and he thought nothing would grow on it. I asked him why he didn't use fertilizer on it. He tried it and raised a first-rate crop from it.

The Chair.—Then you think the results are equally as good from poor ground when you use fertilizer on it?

Mr. Schoonmaker.—I know it. I tried it on a piece of gravel bed. I never could get anything off it until these fertilizers came out. I put this fertilizer on five or six lots of ground—my own and my neighbors,—and the result was something surprising. The last raised a splendid crop of grass. Where the gate posts were nothing was growing, because we had not put any fertilizer on there, but the rest of it was fine. One man said to me, "Why I have cut it and cut it, and I can't keep the grass down." The grass was very thick, too, where the fertilizer had been applied, but where the fertilizer did not come there was nothing growing. We must not buy cheap fertilizers, because it will not pay. Pay your price for it and get good stuff.

The Chair.—I have been so much interested in the remarks of the gentleman, that I hope the Board will give him a vote of thanks for his address.

Prof. Cook.—I want to say one word further. In looking over Mr. Schoonmaker's crops on his place, he told me about his experience in raising celery. He said he had tried for six years before he could raise celery with fertilizers, but he had succeeded now. Let us hear him tell how he did it.

Mr. Schoonmaker.—When I began the use of fertilizers six years ago, I could never succeed in raising a crop of celery. I would put in plenty of the fertilizer and plant my seed, but it was no go. As soon as the seed got down to the fertilizer that was all there was of it. It killed the seed every time. It was no use. At last I thought I would try another plan, and I planted my celery and put the fertilizer on after the plants had begun to grow. Since then I have had no trouble.

A Member.—Did I understand you right? Do you put the fertilizer on after the crop is planted?

Mr. Schoonmaker.—Yes, sir.

The Secretary.—I move you, Mr. President, a vote of thanks to the gentleman for his very interesting and instructive address, and to Prof. Cook for bringing the gentleman here. I think a bit of practical farming is not only very instructive and interesting, but is something we all like to listen to.

Motion seconded and carried.

The Secretary.—In calling the names of the county committees, yesterday morning, three or four of them did not respond. If the gentlemen are here now, we would like to hear from them. I also wish to call your attention to the importance of having your reports in as soon as possible. Some time, about the middle of next week, the matter will go to the printer, and, unless we get these reports from the different counties as they are arranged here, alphabetically, we will have to delay the work. Please let me have these reports, then, as early as possible, sending them to me direct to Newark. If we can give the matter to the printer next week, we will have the report ready for distribution early in March.

Every day you wait makes the report one day later, so let us have prompt reports. In regard to the distribution of these copies, if the secretaries of the different societies will send me a list of the copies they want for distribution, the required number of copies will be sent free of expense.

The Chair.—Next in order on the programme, we have an essay on "Raising Poultry with Incubators and Brooders," by Charles Lippincott, of Burlington county. I take pleasure in introducing you to the gentleman.

[Mr. Lippincott's paper is printed in full in the body of the report.]

The Chair.—The next item on the programme is miscellaneous business in connection with the session of the Board.

Mr. Burrough.—I move you, sir, that a Committee on Legislation be appointed. I think my labors are sufficiently onerous to excuse me from the duties belonging to such a committee.

Mr. Forsythe.—I second that motion, Mr. President. I think such a committee should be appointed at once. I have conferred with a number of members of the Legislature, who are now present with us, and they all say they will do all they can to bring such action about, as may be recommended by the Board.

The Chair.—I appoint to serve on that committee, Judge Parry, Mr. Forsythe and Mr. Quinn.

Mr. Burrough.—Mr. President, is there anything more before this Board for consideration before we adjourn? I have here a specimen of a diseased turnip. If it is the wish of the Board I will present it to the Camden Microscopical Society for examination.

The Chair.—Is it the wish of the Board that Mr. Burrough should present this diseased turnip to the Camden Microscopical Society for examination?

On motion, the turnip to be sent to the society by Mr. Burrough.

Mr. Taylor.—I move a vote of thanks to our secretary, Mr. Quinn.

Motion seconded and carried.

The Chair.—Is there any other business before this Board?

Mr. Burrough.—I move we adjourn.

Motion seconded and carried.

The Chair.—This Board will now adjourn.

Meeting adjourned at 4:20 P. M.

P. T. QUINN,
Secretary.

February 3d and 4th, 1885.

President's Annual Address,

DELIVERED BEFORE THE STATE BOARD OF AGRICULTURE,

IN THE SUPREME COURT CHAMBER, TRENTON,

ON TUESDAY, FEBRUARY 3, 1885,

BY

HON. THOMAS H. DUDLEY.

PRESIDENT'S ANNUAL ADDRESS.

Gentlemen of the Board of Agriculture :

Most of the people who inhabit the globe, and many of the animals that roam over its surface, as well as the birds that warble in the groves, feed upon the products of agriculture. This being so, agriculture is and must ever continue to be of the greatest importance.

Among all the pursuits of man none is more so. And this applies not only to our own country, but to Europe and Asia, as well as the isles of the sea. The people must eat, and the farmer must provide the food. The prince and peasant are alike dependent upon him. No trade, no calling could exist, or industry flourish without the husbandman. If the farmer is dependent upon them, for the clothes he wears, or the tools he uses, they are still more dependent upon him; for every class in every clime must have food, and the farmer must supply it.

These are facts no one can gainsay or dispute. It may not, therefore, be unprofitable to take a brief survey or glance at agriculture as carried on in the old countries of the world, for the purpose of comparing it with our own, and see where we fall short or excel in production and the cultivation of the land. No harm, and possibly good may result from the brief view we may take of some few matters in connection with it.

We may state at the outset, that much progress has been made in most of the countries of Europe during the last twenty years, in agriculture, and especially in implements, tools, &c. Yet, with all the progress made, one is still much astonished to find how far behind many of the countries are, and, in some instances, sections of the same country, with other sections, where they are not a half day's journey apart. This is all the more strange when you consider the fact of the facilities that exist for communicating with all parts of Europe. The large rivers are navigated, and the coast visited by hundreds of steamers, while the interior is interlaced and woven by thousands of miles of railroads and canals, uniting countries and sections with each

other to such an extent, that there are but few spots of Europe, outside of Russia, that are not connected either by rail or water.

Whilst in Rome last winter, I saw a young man with a dung-fork on his shoulder, which he had just purchased at an agricultural store, and was taking to the farm, quite a load for one to carry, much less to work with. I approached him and took the fork in my hands to examine it. The handle was large and rough, and not less than four feet long, with five tines, made of iron or steel, at least one inch broad and a half inch thick. He seemed to be well pleased with his purchase, and was carrying it home, no doubt, in the belief that it was one of the last, best and most improved in use. He had paid more for it than we charge for ours in the States, and I think this was quite right, for it certainly contained enough iron and wood to make two of ours, and of course one ought always pay for the material used.

In Spain I saw many plows made of the stumps or roots of the olive tree, fastened to a beam made of the trunk of the same tree, with a short cow's horn on the end of the stump to penetrate the earth and take the place of a share. Generally these plows had one handle with which the farmer guided it, while another person attended and drove the team, generally consisting of two yoke of cows or oxen that pulled the machine, as it scratched rather than plowed the soil. Their carts were large and heavy, with wheels often made of planks nailed one to the other. You can imagine how handy such a cart would be, and the power it would take to move it when in use. And yet to-day, and within a ride of thirty-six hours from Paris, much of the land in Spain is cultivated with such ploughs and corresponding implements.

I once saw on the plains of Tuscany, a farmer breaking up his land preparatory to planting. His plow though very rude, was something better than those used in Spain, yet in this country it would have been regarded as a great curiosity, especially after the observer had been informed, or in some other way learned, what it was and the use and purpose for which it had been made. It was in use when I saw it. The soil was light and therefore loose and easily turned. The plow though rude, was small and moved with little effort. The farmer himself held the handle, and, no doubt, imagined he was doing good work in the so-called furrows which he was turning. His team consisted of his jackass with his wife hitched on the other side, who seemed to have a double duty to perform: to pull as much as the jack-

ass, and at the same time to guide her assistant, the animal. This farmer had the advantage over his brother husbandman in Spain. There it required an extra man to guide and manage the team; here the services of the extra man were not needed; for the good wife, while pulling her full share at the plow, also guided the team. This was some years ago. At that time, say ten years ago, such scenes were frequent, not only in Tuscany, but upon the plains of Lombardy and other places in Europe.

Thanks to the progress made in Italy, mainly through the efforts of King Humbert, who has shown himself far in advance of his people, agriculture, with all the other industries of the country, has made rapid progress, and very much of this primitive mode of cultivating the land has given way to the improvements of the age. Yet it must be admitted that there is still great room for improvement in their tools and agricultural implements, as well as farming.

Last winter I attended the Agricultural Exhibition of France, held in the Palace of Industry, on the Champs Elysees, in the city of Paris. The ground floor of the building was filled with cattle, pigs, rabbits, pigeons, poultry, &c., while the upper floors were used to exhibit farm products, including vegetables, fruits, grain, hay and dairy products, and the hatching and feeding of poultry.

The whole space between the Palace of Industry and the River Seine, containing, as I computed it, not less than fifteen acres of ground, was covered with agricultural machines, implements, tools, &c. The exhibit, especially in implements, tools and machines, was large, and may be said fairly to include all the latest and most improved of the kind in use on the continent of Europe. I do not mean to say by this that these modern improvements are to be found in all parts of Europe—far from this. There are countries and sections where they seem not to have been introduced, and where the cultivators of the soil are still content to continue in the old ways and with the old implements, such as their fore fathers used generations ago. And even in countries where they have been introduced, you do not find them in the hands of every husbandman.

Many, very many, probably from want of means to purchase, or else ignorance of their utility or existence, have failed to avail themselves of these improvements. Wherever they have been introduced, the effects upon the cultivation are most marked. Interspersed in this great show, were to be found many of our agricultural implements

and tools. I found the McCormick reaper, the Buckeye mower, the Philadelphia lawn mower, with some of our forks, hoes, etc. Ours were noted for their simplicity, lightness and adaptability, and while there were many on exhibition made or copied after ours, you could see in them, as in most other cases of imitations, that they fell short of the original from which they had been modeled.

Whilst I was much pleased at the great advance that had been made by the French, since the last exhibition which I had attended, it was apparent that in almost everything they were still very far behind us in their implements, tools, &c. I spent four days in examining this great exhibition, and, after the managers learned who I was, received the greatest attention.

I collected, from the different exhibitors, price lists and catalogues of the goods exhibited. Most of these contained, not only the prices for which they were sold, but drawings of what was exhibited. I have them now, and shall be glad if the Board will appoint a committee to whom I can hand them for examination. Of course, there will be found many implements not in use in this country, whilst we have many not in use there. How far any of these can be introduced and utilized, for the benefit of the farmer in this country, is a question for those practically engaged in agriculture to determine. Two things were most marked: First, the superiority of ours over theirs; and, second, the cheapness in price of ours as compared with theirs. This will appear by the catalogues and price lists which I have. We can claim, and I state it with great pride, that there is no country in the world where there have been so many practical improvements in agricultural tools, implements and machinery, and where they are so cheap in price and good in quality, as in the United States. In quality, cheapness and adaptability, ours are superior to any found in the world. Whether this is attributable to our necessities, or the inventive genius of our people, or to both, is not necessary for us to inquire. It is quite sufficient to state the fact that to-day our wagons, carts, plows, cultivators, harrows, reapers, mowers, rakes and tools are cheaper in price and better in quality than they are anywhere in Europe.

The vegetable display, for a winter exhibition, was very fine; there was over 200 varieties of the white potato, and every kind of carrots and beets known; and some of the latter of enormous size—the largest I have ever seen. There were many that weighed over twenty pounds,

nearly three feet in length, and almost a foot in diameter. Grain was exhibited not only threshed but in the stalk ; grass and grass seed of the different varieties grown in France. There were cattle from all the provinces, varieties quite unknown in this country. The display of poultry was larger in numbers and greater in varieties than I had ever seen. The French are famous for their poultry ; and, certainly, when it is dressed and cooked for the table, in taste and flavor is not surpassed, if equaled, by the poultry of any country.

The exhibition was a great one, and quite worth a trip across the Atlantic to see. It was devoted entirely to the interests of agriculture, and proved a great success, financially, as well as in the products displayed, notwithstanding it, like all other agricultural exhibitions of Europe, was run without the addition of horse-racing, the attractive feature, if not the moving object, of too many of the so-called agricultural exhibitions held in the United States. I have attended many agricultural exhibitions in Europe, and whilst the project might be unfavorably received by our people, who are slow to do much in behalf of agriculture, and possibly liable to abuse if attempted, yet I think the subject of national reciprocity, in holding these exhibitions, is of the first importance. I believe money could not be more profitably and usefully expended by the State or national government than in appointing and sending competent agriculturists and experts to attend these exhibitions in Europe, with the view of introducing all that is new and useful for the benefit of our own people. I have often wished that this could be brought about, and I take this mode of recommending it to your consideration. It is quite worthy the attention of this Board, and, in my judgment, there are but few things that would be more useful and beneficial to the agriculturists of the country. I wish I could say as much about the mode of our farming in the United States as I can about our agricultural implements, &c. Whilst there has been so much improvement in these during the last few years, it must be admitted that there is still a degree of extravagance and waste in the cultivation of the land quite inexcusable. Fences often take acres of the most valuable land on the farm, while still more is lost in head-lands, to say nothing of what is lost by the want of proper drainage, clearing and cultivation.

On landing in Europe, one is struck with the closeness of their cultivation and the efforts of the people to make the most of every foot of land. The potatoes and other crops are planted much closer than

ours, sometimes almost two rows where we have one, hence the yield is much greater per acre than it is with us, whilst headlands, and often even the banks and sides of railway tracks, are all under cultivation. I have seen some farms in my own State where there was almost enough waste land in fences, headlands, &c., to maintain the family of the farmer, if the land had been properly cultivated.

In England, Scotland and Ireland most of the lands are held by the nobility. There are but few farmers who own the farms or any of the land they cultivate. Indeed, this applies to the dwelling-houses in towns and cities as well.

London contains over 4,000,000 inhabitants; about four times as many as there are in the city of Philadelphia. A large portion of this great city is owned by three men—the Duke of Westminster, the Duke of Devonshire and the Duke of Bedford. The tendency of the landed system in England is to accumulate the lands in the hands of the great landed proprietors. The United Kingdom, including the Channel Islands, contains 78,411,520 acres; the population numbers over 35,000,000, and yet the land has accumulated to such an extent that 977 people out of the population own no less than 30,064,534 acres, nearly 4,000,000 acres more than one-third of the whole United Kingdom, including the Islands.

As the land accumulates the landholders become fewer in number each year, and this will continue until the laws of primogeniture are abolished. The effect of this accumulation is injurious to agriculture in the constantly and yearly diminution of the quantity of land cultivated.

In the year 1869 there were 9,758,037 acres in Great Britain—that is, England, Wales and Scotland—under cultivation with wheat, barley, oats, rye, beans and peas, which, in England, are all included under the term of corn; in 1883 there were but 8,618,675 acres, more than a million of acres less than there was in 1869, whilst the population had increased during the same period more than five and a half millions. In 1869 the population was 25,469,594, and in 1883, 30,998,970, and the decrease of acreage in corn was 1,139,362. Five and a half millions more people to feed and more than a million of acres of land less in wheat, &c., to feed them. As the land accumulates in the hands of the few, the cultivation diminishes and the population increases, and apparently in about the same ratio. It is, therefore, not to be wondered at that food is becoming more scarce, and

that the quantity they have to buy greater, every year. Their population thus increases and their supply of food decreases. For ten articles of food—namely, live animals, meat, butter, cheese, breadstuffs, lard, fish, eggs, rice and potatoes—which England imported to feed her people in 1870, she paid about two hundred and seventy-six millions of dollars, and in 1883 she paid over six hundred millions of dollars, and it is likely to continue increasing, about in this ratio, not only with regard to these articles, but in all other descriptions of food, from year to year, until the laws of primogeniture are repealed.

I do not pretend to say that the repeal of these laws will enable her to raise all the food she now requires to feed her people; it will not do it, constituted as England is, but I do say that it would greatly increase her food supply.

If she would but apply to her land system some of the free-trade notions which she so strongly and persistently commends to other nations in regard to commerce, her people, and especially the farmers, would be largely the gainers by it.

In France they now have no laws of primogeniture, and the land of intestates is divided among all the children; in consequence the number of land owners are yearly increasing. The policy of France, with regard to land, is the reverse of England, and increases the number of land owners and increases production, whilst the policy of England diminishes the number of land owners and diminishes production. Any one might naturally suppose this would be the case, and the statistics of the two countries prove it.

The fact of the division and subdivision of the lands in France, until some of the holdings become very small, increases rather than diminishes production. The small holdings seems to stimulate the owner to resort to every expedient, including fertilizers, to get the largest possible return out of his land. The absence of fences enables him to cultivate it quite up to his neighbor's boundary line; and when the plow cannot be used, he resorts to the spade and hoe, and the female as well as the male members of the family are drafted into the service. In this way, each owner makes the most he can out of his land, and all mankind directly or indirectly receive the benefit. This is as it should be, for the earth has been given to man for a subsistence as well as a habitation; the less the waste and the closer the cultivation, the more abundant will be the supply of food; and the

larger the supply, the more there will be for man, as well as beast, to subsist upon.

Next in importance to production is the question of consumption ; or, in other words, the market in which the farmer is to sell his surplus products. This question is scarcely secondary to the former ; for without a market in which to sell, there would be no inducement for the farmer to produce beyond the actual wants of himself and family, and he would have no means whatever to purchase the clothing to keep him warm, or even the implements necessary to cultivate the land. It is the surplus products that give him the means to buy the necessaries of life. It is in vain that he toils, if there is no one to buy what he produces. Outside of tobacco and cotton, the agricultural products of our country, for the year 1883, amounted to something over three thousand millions of dollars.

The whole of the agricultural products exported from this country, outside of cotton and tobacco, during the last fiscal year, amounted to three hundred and twenty-one millions of dollars—about ten per cent. of what we produced. But these exports included butter, cheese, bacon, hams, lard, tallow, and canned meats, vegetables and fruit, and linseed oil, oil cake, oleomargarine, &c., amounting to over one hundred and seventeen millions of dollars, and wheat flour in barrels, amounting to fifty-one millions of dollars in value, all of which had been partially manufactured and increased in value to this extent.

It will be safe, therefore, to assume that of the agricultural products raised in the country, outside of cotton and tobacco, not more than eight per cent., take one year with another, are exported, and ninety-two per cent. are consumed at home. It will thus be seen that the home market is the main and chief dependence of our farmers for the surplus products which they raise, and have to sell ; and that the foreign market is in every way secondary to it. The home market, too, is near at hand, and always certain, whilst the foreign is far away, capricious and uncertain, depending upon the crops abroad, a good or bad harvest, and always open to the competition of the world. This being so, it follows that the more diverse our industrial interests at home are, the better will be the farmer's market ; that is, the more the farmer will be able to sell to our own people.

To build up and extend the home market is, therefore, of the greatest importance to the farmers of the country. Wheat has been selling in New York, during most of the fall and winter, for eighty cents or

less a bushel ; and probably many of the farmers in the West have not realized more than fifty cents, being a loss to them, on the crop raised last year, of nearly a hundred millions of dollars from the price it was selling at a year ago. And to this extent has the price fallen in England, on all the surplus products of wheat which we have shipped there of the crop of 1884. And the price in England, where we send the most of our surplus wheat, regulates the price here as well. The price prevailing in the market abroad, if you are dependent upon that market, affects and controls the price at home. This decline in wheat is serious, and, if it is to continue, will be most injurious to the agricultural interests of the country. In time it must, and will, affect the price of all other cereals as well.

What has been the cause of this decline in price? Is it likely to continue? And what is the remedy, if any? These are questions of the gravest importance, and worthy of the most careful consideration, not only of this Board, but of the statesmen of the country.

The loss to our farmers on the crop of last year has been stated. It is quite sufficient to wipe out most, if not all, the profit to the farmer on the wheat that was raised, and if the cause is radical, as I fear it is, and not spasmodic or from over-production, it is most serious. Our farmers cannot stand a loss of a hundred millions of dollars a year upon this great staple, and especially when this loss, if it continues, will affect and reduce the price of other cereal products.

England at present is the great market for our surplus agricultural products of breadstuffs. She does not raise, one year with another, more than one-half the breadstuffs she requires to feed her people. The rest she has to buy from other countries, buying always where she can purchase the cheapest, and on the best terms. She paid, in 1883, more than three hundred and twenty-seven million dollars for breadstuffs, including 84,550,271 cwts. of wheat and wheat flour. France and Belgium also take wheat from us when they have bad harvests.

The question of raising wheat in India has long been discussed in England. Much of the land there is very fertile, well adapted to the growth of wheat, and labor cheap. There has been no obstacle in the way excepting capital and railway facilities for moving the grain to the sea-board. But it has not taken shape or assumed alarming proportions until within the last few years. It is said now that these

difficulties are to be met, and sufficient capital provided, and facilities afforded for moving the grain.

Certain it is that the cultivation of wheat in India has commenced in earnest, and is being pushed with vigor. Let the figures speak for themselves.

In 1879, the wheat exported from India, amounted to 1,056,720 cwts.; in 1881, to 7,444,375 cwts.; in 1882, to 19,901,005 cwts.; while in 1883, it amounted to over forty-four millions of bushels; more than half the quantity we shipped from the United States to England during that year. Of this amount so exported from India, England took in 1879, 889,531 cwts.; in 1881, 7,338,751 cwts.; in 1882, 8,463,716 cwts., and in 1883, 11,248,988 cwts., or 20,998,110 bushels. France, Belgium and the other European countries taking the balance, amounting to about twenty-three millions of bushels.

In quality and yield of flour, this India wheat is equal to that grown in the United States. Indeed, I have the figures from one of the leading corn merchants in Liverpool, which show that the India wheat is superior to ours in the yield of flour.

British India, with a population of over 253,000,000, nearly five times that of the United States, has but about ten thousand miles of railway. There are whole districts of country, some of them three times as large as the State of New York, with land most fertile, almost as well adapted to the growth of wheat as any that we have in the United States, that have not a mile of railway in them. And even where they have railway facilities, the cultivation of wheat is very much impeded by the exorbitant charges they make for its transit to the sea-board. Wheat is carried from Chicago to New York for thirteen cents per bushel, whilst in most instances, in India, they charge double this amount for about one-half the distance. But this will soon be obviated. Steps are being taken in England to remedy this by building railways to open up the country and facilitate the transportation to the sea-board. The distance from Bombay to Liverpool, by the Suez canal, is not more than half the distance it is from San Francisco to Liverpool, by way of Cape Horn. Labor can be had in India, on the farms, for less than ten cents per day, wheat can be raised at twenty-five cents per bushel, and all that is required is proper railway facilities to enable India to put down wheat in Liverpool or London, sufficient in quantity to supply the wants of Europe, and yield a profit to the husbandman, at less price than it is possible

for us in the United States to do it, even with our rich prairie lands and all of our improved agricultural implements and machinery, unless we reduce our wages to the same standard paid in India, which is impossible, and ought not to be done, even if possible.

To show how labor can be used in India against machinery, take an instance. Suppose a reaper can be purchased for \$100, and that it will last ten years—and I suppose eight years is its full life—the interest on this sum at six per cent. would be \$6 per year, and if the machine lasts ten years, then the loss on the capital expended would be \$10 a year, which, with the interest, would amount to \$16, besides the expense of the motive power in using it. Now this sum would hire sixteen men at ten cents a day for ten days each, quite enough force to gather seventy-five acres of wheat. It will thus be seen, that the India farmer can with his cheap labor even dispense with our improved agricultural implements and machinery, and harvest his crop at less cost than our farmer in the United States. The cheap labor also comes in the preparation of the ground, the seeding, the hauling, the threshing and handling the grain as well.

I have not been accurately informed as to the quantity of wheat exported from India to Europe during 1884, but it is understood to be large—much more than in 1883, and quite enough, with the previous exportations, to glut the markets and cause the decline in the prices we have had without the depressions in business in this country or in Europe.

The committee of the Cobden Club of England, in their last report to the club, published within the last few weeks, in alluding to this question say: "A most interesting subject at the present time, is the expansion of the export trade of India in agricultural productions. Within the last four years the export of wheat from that country to Europe has almost trebled, and it begins to appear that in the near future America, Russia and Egypt may have but little chance in this trade in competition with India. If the Committee on Indian Railways, as is confidently expected, report favorably upon the project for a very considerable though careful expansion of the railway system of India, the result will be to give so great an impetus to the cultivation and export of corn from that country as to lead the producers of grain in other parts of the world to reconsider the incidence of their import tariffs, with the view of reducing the cost of agricultural production. The very exceptional cheapness of agricultural labor in

India may compel America and Russia to make life and the machinery and appliances of labor, cheap at home for the producers of corn for the markets of Europe. The total exports of wheat from India rose in value from £6,068,934 in 1882-3 to £8,879,832 in 1883-4."

This is the condition of the grain business of India to-day. They are now our competitors, and with their rich land and cheap labor, have already put down the price and reduced the demands from this country to such an extent that there is but little, if any, profit to the farmer in raising wheat, and as soon as additional railway facilities are given, they will supply all the demands of England, France and Belgium, and at prices much less than our farmers can afford to do it. The crisis is, therefore, now upon us, and the question is, what can be done to meet it? The Cobden Club tells us we must put down the price of our labor; this is the only remedy that this English institution, which is so largely engaged in the task of educating our people, proposes. We are to reduce our labor, and, I suppose to the standard of labor in India, or else we cannot compete with her in the production of wheat for England. This we cannot do; and if we could we ought not, so long as there is any other possible remedy.

There is another remedy, and one much better for our people and country, that is to create a home market sufficient to consume our surplus products here in the United States; and this can be done at any time when we are disposed to do it.

We have seen that these agricultural products which we export, outside of cotton and tobacco, amount to only about eight per cent. of what we produce. Now the production of commodities by our manufacturers last year amounted to about \$7,000,000,000. Of this amount only about \$350,000,000 worth were exported. The rest remained at home for consumption. We imported from foreign countries of manufactured commodities about \$467,000,000 in value. Supposing these were all consumed here, it would then appear that of the manufactured commodities consumed in this country last year, ninety-three per cent. were manufactured here, and less than seven per cent. imported. Now if we will manufacture here in the country this seven per cent. of commodities which we now import from abroad, the people employed in manufacturing them will eat and consume the whole of the eight per cent. of the surplus agricultural products we now export.

You would in this way at once create a home market for all the

surplus products of the farmers. Our farmers would then be no longer dependent upon the foreign market to sell their products, and, in consequence, prices here would not be affected by the prices of the foreign market, but regulated by the supply and demand of the home market only.

Thus far the competition in India is confined to wheat. Now if it should extend to all cereals—and it is not likely that it will ever go beyond this—or take in and include pork, lard, bacon, hams, beef, tallow, butter, cheese, and many other agricultural products—the home market created, would not only be sufficient, but more than enough to consume all the surplus breadstuffs which we are now dependent on Europe to buy. All that is required to meet the crisis and provide a remedy therefor, is for our government to pass such laws as will induce our own people to manufacture what we now buy of foreign nations, and the remedy is provided, and the danger averted, and in a way that will stimulate our own industries, develop the resources of our country, provide work for our people, as well as a market for our farmers, and thus increase our wealth, and extend our power, civilization and grandeur as a nation.

INSECTS INJURIOUS TO VEGETATION,

BY PROF. CHAS. V. RILEY, U. S. ENTOMOLOGIST.

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Mr. President, and Gentlemen of the New Jersey State Board of Agriculture:

It will undoubtedly seem to you like a coming down to have to listen to a talk about insects, after listening to the able address of your President.

Let me preface my remarks by saying, that should you be disappointed at them, you must lay the blame on your worthy Secretary, who not only insisted on my coming, but took the liberty of choosing the title of my address, and I assure you that upon recently returning from New Orleans, it was a surprise to find myself and subject, down on your programme. But the subject is broad enough, though when it comes to the specific insects that most affect New Jersey, I know as little of them as of any State in the Union. My investigations of insects injurious to agriculture have been made, for the most part, in the West and South. If I had to talk about the chinch bug, the Rocky Mountain locust, the cotton worm, or any of the other important pests of the West and South, I should feel more at home. Fortunately for you, New Jersey is not troubled with any of these.

There are certain general truths in economic entomology, and they may well be stated by way of prelude to the consideration of specific insects, and I shall take the liberty of reading to you from some of the proof sheets of my annual report, which has not yet been published, and which will be as new to you as any special report. I shall then refer to some special subjects.

“Insects play a most important part in the economy of nature. The average townsman, whose knowledge of them is confined to certain lectual and household pests, can scarcely appreciate the fact or have

any other feeling than repugnance and contempt for the annoying hexapods of his acquaintance. Yet, as scavengers, as pollenizers of our flowers and fruits, or as food for other animals, they not only vitally concern man, but, philosophically considered, are seen to be essential to his very existence.

"We receive, also, some direct benefits from insects. They supply us with the sweetest of sweets, our very best inks and dyes, and our finest robes and tapers, to say nothing of various acids, lacs and waxes; while few, who have not studied the subject, have any just idea of the importance of insects and their products as articles of human diet.

"But the benefits, whether direct or indirect, which man derives from insects, must always appear trifling compared to the injury they inflict on our agriculture.

"In the primitive condition of the country, as the white man found it, insects, doubtless, took their proper place in nature's economy, and rarely preponderated in any direction to the injury of the wild plants scattered, for the most part, sparsely throughout their range. Harmony between organisms, in the sense of the widest inter-relation and inter-dependence, had resulted in the long course of ages. But civilized man violated this primitive harmony. His agriculture, which is essentially the encouragement and cultivation, in large tracts, of one species of plant to the exclusion of others which he denominates weeds, gave exceptional facilities for the multiplication of such insects as naturally fed on such plants. In addition to this inevitable increase of species thus encouraged, many others have been unwittingly imported from other countries chiefly through the instrumentality of commerce with those countries; for it is a most significant fact that the worst weeds and the worst insect pests of American agriculture are importations from Europe. Thus, in addition to the undue increase of our native species, as above noted, we have to contend with these introduced foreigners, and it is no wonder that Dr. Fitch declared America to be the land of insects, for, as compared to Europe, we are truly bug-ridden.

"As I have stated (*Encyclopedia Americana: Agricultural Entomology*): 'The losses occasioned by insects injurious to agriculture in the United States, are, in the aggregate, enormous, and have been variously estimated at from \$300,000,000 to \$400,000,000 annually. It will never be possible to fully protect our crops from the ravages

of the many species that injuriously affect them ; but it is the aim of the economic entomologist to prevent as much of the loss as possible and at the very least expense. To do so effectually, the chief knowledge required is of an entomological nature, *i. e.*, the full life-history and habits of the different species ; and this implies a great deal of close and accurate work in field and laboratory. By means of it we learn which species are beneficial, and which injurious ; and the ability to distinguish between friend and foe is of the first importance in coping with the latter, for it is a notorious fact that the farmer often does more harm than good by destroying the former in his blind efforts to save his crops.

“A great deal has been written and published of late years, on the subject of economic entomology, much of it, however, at second hand ; for, unfortunately, the original workers are few. That comparatively small progress has hitherto been made, is due to this last fact, as well as to the intricacies and complex nature of the subject. The economic entomologist, to do effectual work, must possess, not merely a knowledge of the particular injurious species, and its habits, with which he wishes to deal, but must study its relations to wild plants as well as to the particular cultivated crops it affects. He must also study it in its relations to other animals. Indeed, its whole environment must be considered, especially in connection with the farmers' wants, the natural checks which surround it, and the methods of culture that most affect it. The habits of birds, the nature and development of minute parasitic organisms such as fungi, the bearing of meteorology, must all be considered, and yet, with the knowledge that a study of all these bearings implies, he will frequently fail of practical results without experiment and mechanical ingenuity.”

“The earlier writers on Applied Entomology, as Peck, Harris, Fitch, Walsh, LeBaron, Glover, did good work in unraveling the life-mysteries of injurious species, and framed their advice to the cultivator from these entomographic studies. Mere study of this kind alone, however, while essential, is not often productive of those important practical results which follow when it is combined with field work and experiment by competent persons and upon scientific principles. Many of the remedies proposed and recommended in the agricultural press are either ridiculous, or else based on misleading empiricism, and economic entomology, as a science, is of comparatively recent date.

"The time-limit of this paper will permit but the briefest reference, by way of illustration, to some of the means alluded to. I have already indicated the prime importance of a knowledge of the life-history of the species to be dealt with—a knowledge that can come only by direct and careful inductive research carried on sometimes during many years; for every insect exists, in the course of its development, in four different states, three of them more or less abruptly marked by metamorphosis and each with habit and environment peculiar to it. Thus the same species may inhabit earth, air and water at one or the other period of life, and yet be quite incapable of a change of environment at any one period. It took me five years, with a number of observers at command, to definitely settle some points in the life-history of the cotton worm (*Aletia xyliana*, Say), and with all the resources of the French Government—its liberal premium, its superior and sub-commissions appointed for the purpose and at work for the past fifteen years. There is much that is yet mooted in reference to grape phylloxera." * * *

Mr. President, I will now say a few additional words in regard to the grape phylloxera, referred to in the passages of my forthcoming report just read, in order to illustrate the complicated history which a single insect may present.

About the year 1867, the French grape growers began to notice that their vines were dying. This death was found to be due to a rotting of the roots. This was caused by a little root louse, the phylloxera.

To make a long story short, this insect turned out to be an importation from America, where it has always existed east of the Rocky Mountains, and in 1871 I discovered that it was at work on the roots of our vines, just as it was on those of France.

In 1873, Prof. J. E. Planchon was sent by the French Government to this country to further study this insect in America, and he confirmed all my conclusions.

The insect proves more destructive to some of our vines than to others. Some of our vines resist its ravages better than others. Some of them suffer and die. A great many of our vines suffer through certain years.

There is scarcely a vine in this State on which I could not find this insect. I made a study of the varieties which best resist it, and urged their use as stocks for the French grape-growers to graft their more susceptible varieties on.

A very large demand was thus created for some of our vines in France. Last Summer, when I was over there, I witnessed thousands of acres that had previously been ruined by phylloxera, replanted and flourishing on American stocks, and it was undoubtedly one of the most pleasant experiences an American can have.

The insect occurs in the gall-inhabiting and in the root-inhabiting form. In the gall-inhabiting form it appears on the leaf of certain varieties, like the Clinton. The root-inhabiting form is the most important one to us.

By way of elucidating the habits and transformations of this insect, and of showing how easily false conclusions in reference to it may be reached, let me again read from my forthcoming report to the Department of Agriculture:

"IN REFERENCE TO THE TREATY OF BERNE, AND THE PROHIBITION OF THE INTRODUCTION OF BULBS AND CUTTINGS FROM THE UNITED STATES INTO GERMANY.

"BUREAU OF ENTOMOLOGY,
"WASHINGTON, February 9th, 1884. }

"SIR—I beg to submit the following report on the communication of Hon. A. A. Sargent, Minister to Berlin, to the honorable the Secretary of State, which you have referred to me:

"Certain American exporters of grape-vines (Messrs. Boelker & Sons, of New York,) have complained to the Department of State concerning the exclusion of American plants from Germany, and Mr. Sargent reports upon the state of the German laws in reference to such importations.

"It seems that Germany, by the imperial decree of July 4th, 1883, prohibits absolutely the importation of grape-vines, cuttings and roots. The importation of grapes and husks and of all other plants is allowed only to nations which took part in the Berne Congress of 1881, and then only under certain restrictions as to packing, certificates from official experts, &c. Thus, Germany has gone a step beyond the provisions of the Berne Congress, and the stringency of the decree has caused great excitement and indignation among nurserymen in this country.

"While no one can appreciate the necessity for stringent measures against the introduction of the phylloxera into non-infested countries more than I do, yet certain of the provisions of this last decree appear

to me utterly useless, and without doubt they cause much loss and annoyance to nurserymen in this and other countries, as well as to those of Germany, without producing any corresponding benefit.

"The clause in the decree prohibiting the importation of all 'nurslings, shrubs and other garden products not belonging to the category of the grape-vine, coming from nurseries and hot-houses into the Empire,' is based upon the possibility of the winged females settling upon such plants and depositing the few eggs which give birth to the true males and females which produce the winter-egg. I will repeat here, therefore, the conclusion which I have repeatedly urged in discussing restrictive legislation in reference to the phylloxera, and which the habits and life-history of the insect justify.

"The eggs from the winged females are most often laid in or on the ground near the base of the vine, and they are so delicate as to require especially favorable conditions of temperature and moisture to enable them to hatch. They must, in my judgment, infallibly perish when deposited on anything else than the lower surface of the living grape-leaf where they can receive moisture by endosmosis, or in crevices in earth that is kept moderately moist by rain or dew. But even supposing that these eggs could hatch, and the resulting female should lay her impregnated egg on any other living plant than grape, and that this egg should give birth in due time to the stem-mother, she would inevitably perish without issue for want of suitable food. With the utmost care to supply the natural conditions, I have failed nine times out of ten to obtain even the sexual individuals, and it is much more difficult to get the impregnated egg. European observers have had the same experience. From this it follows that the introduction of phylloxera upon any other plant than the grape-vine, at any season of the year, is impossible, and hence the folly of the prohibition.

"As to the possibility of its introduction upon grape-vines themselves, however, there can be no doubt. The insect can be carried on the roots of vines in the winter either in the dormant larva state, or in the 'winter-egg' state, and in this latter state it may occur upon almost any part of the plant above ground, more particularly under the loose bark of the two-year-old canes, although recent observations have proven that whenever it occurs above ground it is produced rather from the gall-inhabiting type than from the more dangerous root form. Therefore, the clause which prohibits the introduction of

cuttings, with or without roots, into districts where the phylloxera absolutely does not exist, is fully justified by the facts. It may be well to state, however, that in districts where the phylloxera exists, no better preventive can be adopted than the introduction of the hardy and resisting American vines as stocks upon which to graft the more susceptible European varieties.

"It should also be urged in this connection that while the decree is justified, in so far as it prohibits the actual introduction of vines and cuttings, there can be no danger from the mere passage through a non-infested country of such vines. These are necessarily boxed, and can only be properly and safely shipped during the cold or non-growing season when the egg is dormant; so that there is a practical impossibility in the introduction of the insect by such a passage.

"While I am rather in the dark as to the nature of the original complaint (as no copy accompanied the papers received from the State Department), the United States can safely and with great justice urge upon Germany the reversal of that portion of the decree which does not apply to grape-vines proper.

"Respectfully,

"C. V. RILEY,
"Entomologist.

"Hon. GEORGE B. LORING,
"Commissioner of Agriculture."

"THE GRAPE PHYLLOXERA IN GRAPERIES—LEGAL QUESTIONS
ARISING.

"BUREAU OF ENTOMOLOGY,
"WASHINGTON, November 5th, 1884. }

"DEAR SIR—In making to you a final report of my conclusions in reference to the diseased condition of certain European grape-vines, furnished by you last spring to Mr. Charles J. Osborn, of Mamaronock, Westchester county, New York, and as to whether the grape phylloxera (*phylloxera vastatrix*) had anything to do with such diseased condition, it becomes necessary that I summarize the points made in your various inquiries sent to this department since the 1st of July last, and particularly those made since my return from Europe. The following facts become manifest from a review of this correspondence:

"1st. The plants were obtained by you from the well-known firms of Ellwanger & Barry, of Rochester, and Hoopes Bro. & Thomas, of

Cherry Hill Nurseries, West Chester, Pa., and shipped direct to where they were planted. They were grown in pots in the usual way, and they were planted in the borders of a new grapery the latter part of last February. They were strong two-year-old plants, to all appearance in splendid condition, made up of leading exotic varieties, Black Hamburgs, &c. The borders, from all reports, were carefully prepared last autumn and winter, the materials used being old rotted sod made into compost, with the usual proportion of bone-dust.

"2d. About the middle of June, after the vines had made several feet of healthy growth, the lower leaf-stalks began to weaken, allowing the two or three basal leaves from the main shoot to droop. From the time that the vines showed a failing the cause seems to have been earnestly sought for, and the question as to whether it was due to phylloxera injury raised. Finally, during July and August all parts of the vine began to turn yellow, the phylloxera was noticed upon the roots, and Mr. Osborn, his gardener, and yourself concluded that the insect was the cause of the unhealthy condition of the vines.

"Assuming such to be the case, you wish to know whether it was possible that the insect got into the grapery with the material used for the border, or whether it could have entered in some other way.

"On the supposition that the insect had been introduced on the vines you sold, you were held responsible by Mr. Osborn for their failure. This was the condition of the case when, on the 20th of September, you visited the department and conferred with me in reference to the matter. I told you then that, from all the facts, I felt assured that you had arrived at a wrong conclusion in attributing the diseased condition of the vines to phylloxera, but that I would postpone making you an official report until I had made a personal examination of the case. My conclusions are now quite definite, so that I feel warranted in reporting with assurance, from the examination made of the vine sent early in July, as well as of those received later, both from the Cherry Hill Nurseries and from Mr. Osborn's grapery, that the vines were healthy and exceptionally free from phylloxera when they came from the nursery, and that even up to the time of their being uprooted and destroyed the phylloxera work had at no time been sufficient to do them material harm. A root received October 2d, and that had already been thrown away, showed no rotting, and so few traces of phylloxera that I considered it exceptionally free. It should here be borne in mind that this insect occurs very generally

over the country east of the Rocky Mountains; that no vineyard, unless in an exceptional situation, is free from it. Ordinarily, however, on the majority of our indigenous American vines, its presence results in little or no harm. Even in graperies it may almost invariably be found, but rarely in sufficient numbers to seriously injure the plants. Moreover, in its very worst manifestations, and upon those foreign vines most susceptible to its attacks, the vine does not succumb until the third year after the introduction of the insect. The disease in its acute form is well marked by a peculiar yellowing of the leaves, diminished growth and absence of tendrils, while the root system is generally entirely rotten. The presence of the insect in more or less abundance on the fibrous roots is no evidence of injury, but rather an evidence to the contrary, for so long as there are fibrous roots in abundance for it to attack, the injurious stage of the disease, namely, the rotting or decay of the larger roots, cannot be initiated.

"From all these facts, and others that might be mentioned, I do not hesitate to say that Mr. Orborn's vines were not injured by the phylloxera, and I feel that the digging of them up and casting them aside was the result of false and unjustified fears and imperfect knowledge of the insect. As to whether the insect was introduced from the nursery, or got into the grapery from surrounding vineyards, or was introduced in the sod, the probability as between the first and second suppositions is that it was introduced with the plants; for while the evidence shows that the plants were remarkably healthy, yet, as I have already stated, the insect is everywhere found in those parts of the country from which the vines came. A few of the insects may very probably have been on some of the vines, as they are almost sure to be on such as are two years old. That they were in the new-made soil is extremely improbable, as the insect is confined to the grape-vine, and could only have been thus introduced from soil taken from a vineyard.

"This is as far as I feel justified in rendering a report from the standpoint of the entomologist. What the real cause of the trouble was I must leave to others, but upon consultation with Mr. William Saunders, the horticulturist of the department, I find that it is no uncommon thing for vines planted as these were, in very rich, deep borders, to wilt and show evidence of disease in the manner in which the vines in question did, especially where they are kept too moist; so that the probability is that they languished from the character of the

soil and of the treatment. This view is supported by a sample of the soil that I brought to Washington for examination, and also by the fact that I saw other potted vines in Mr. Osborn's grapery that had shown similar symptoms, but had not been thrown away, and were still living and promising well.

"Finally, in the event of the phylloxera becoming numerous enough to cause any injury, it would certainly be unwise to dig the vines up prematurely where the judicious use of kerosene emulsion or bi-sulphide of carbon would readily destroy the insects, and could be so easily employed under such circumstances as those surrounding Mr. Osborn's vines. I have the honor to remain,

"Yours respectfully,

"C. V. RILEY.

"MR. FRED. W. KELSEY,

"208 Broadway, New York City."

Now, a few words about insecticides of general application :

Of the many different substances formerly in use, the three best known are, perhaps, tobacco, hellebore and soap. I need not detain you with a detailed account of the manner of their use, as you are all familiar with the manner of applying them.

In regard to the use of tobacco, the fumes of tobacco are just as effectual as any other method of applying it.

The three most important insecticides which have lately come into field use, largely through my own instrumentality, are pyrethrum, arsenical mixtures, and petroleum emulsions.

Pyrethrum is made from the flowers of the *Pyrethrum roseum*, and *P. Cinerari folium*, which are found growing in the mountains of the Caucasus, and other portions of Europe. These flowers are powdered, and thus prepared for use.

This insecticide has been found to be useful in the field as well as in the house, by using it in water. It is, however, only temporary in its effects.

More important, because more lasting, are the poisonous mixtures, arsenic, Paris green and London purple, used very extensively of late years. These remedies are by far the most effectual in the destruction of insect life. A pound of Paris green stirred in a barrel of water, or a half pound of London purple, which is much cheaper, being a manufacturers' refuse, mixed with a barrel of water, properly applied

to plants, will destroy a large number of those insects which feed upon them, that is, those which masticate or chew their food and swallow it.

This method may also be applied against the codling moth, and will insure fair apples, and it may also be applied with equal advantage to the stone fruits, as a protection against the curculios.

The arsenical poisons are not of use as a preventative of, or a remedy for those insects which take their food by suction. These form a large portion of our insect enemies. Against them there is no better remedy than petroleum, as any insect will perish upon coming in contact with it. The use of this remedy has only lately been adopted. Not only petroleum, but all other oils are deadly to insect-life, in whatever form. The principal difficulty now appears to be in the want of a proper knowledge of the best means of preparing this oil for use as an insecticide. The best plan is to prepare an emulsion and apply it in that form. When used in this form it proves a very effective remedy, and I will endeavor to explain to you how this emulsion may be prepared: Take two parts of kerosene and one part of milk and place it in a vessel and violently agitate it, or churn it until it becomes thick like butter, or rather, we may say, until the "butter" comes. This "butter" is the emulsion, which may be then diluted with water to any extent required.

Another form of emulsion may be made just as well by taking two gallons of kerosene and a half-pound of soap to one gallon of water; boil the soap and water and apply hot to the kerosene, and churn in a similar manner to that already mentioned.

This emulsion is just as good as the former. We have found this kerosene emulsion the most satisfactory remedy of all against these sucking insects to which I have already referred.

I will now close by saying a few words upon insecticide machinery. I mean by this term the appliances which are in use for the application of insecticides of whatever nature. It will be impossible for me to refer to them all for they are many and varied; so I will only call your attention to one simple device, viz.: a small flattened disc, into which the liquid is forced tangentially, and from which it issues through a minute hole in one of the flattened sides. I consider this little device the best and most important of all those which have been tried for this purpose. It can be used in applying the emulsion we have just spoken of, and it can also be used in the application of any liquid. It sprays the liquid upon the leaves of the plants, thus doing

very effectual work, and reaching every portion of the leaf. It is called the "cyclone nozzle," on account of the peculiar motion given the liquid it discharges. This little instrument may be attached to the end of a hose, and that attached to an ordinary force pump, and can thus be used very effectually for all liquid insecticides.

One of your well known New Jersey merchants, Mr. Henry B. Crosby, of Paterson, called upon me recently in reference to his elm trees, which he stated appeared to be dying from the effects of the ravages of some kind of insect, a species of leaf-beetle (*Galeruca cal-mariensis*), and his experience is that of every one who has elms growing on his place anywhere along the Atlantic coast. The common appearance of elm trees affected by this insect is that of a tree which is dying. The leaves become seared and look as if they were burned.

I told Mr. Crosby what we had done with the trees in the department grounds. We had been greatly troubled with the elm-beetle on these trees.

The best method is to spray the leaves of the trees with this Paris green water in the spring, or the London purple may be used just as effectively. Use this nozzle which I have just described to you and you will have but little trouble. It is astonishing how long this remedy will last if properly applied. It must be sprayed on the leaves in such a way and with such force as to reach the under sides of the leaves.

A Member.—How can that be done?

Prof. Riley.—It can be done very effectively with the cyclone nozzle which I have just described to you.

This forcing of the poisoned liquid under the leaves is very important, as the rains will not then wash it off so soon, and the insect eating the leaves is sure to eat the poison with it.

A Member.—How do you manage to reach the foliage?

Prof. Riley.—We have found the use of a light bamboo rod, with the septa burned out, very effective. A rubber tube may be passed through this and the force pump placed on a light wagon and attached to one end, with the cyclone nozzle at the other. Then we want one man to ply the pump and one man to guide the nozzle, and in this way the foliage may be reached very satisfactorily, the pump being moved about under the leaves and the spray forced on to all parts of the tree.

We found this to be the best way to fight these insects, and what is

true of the elm-beetle is true of all leaf-feeding insects in this respect. Of course, with the Colorado beetle, or potato bug, and other similar small field insects, there are other methods of applying this and other poisons or insecticides, though this method will be found a very satisfactory one, and I would recommend it to the use of the farmers here.

Mr. President, I have not quite exhausted the time you have allotted me, and I will therefore call your attention to one or two special subjects.

Apples on the Atlantic coast have been a good deal gnarled and deformed, and fruit growers have been puzzled at the cause. The plum curculio is partly to blame, but the chief culprit is the apple curculio (*Anthonomus quadrigibbus*). The pear has suffered greatly this year from a new enemy, as I have learned in the course of my correspondence. It is a small cecidomyidons larva. Several occur in a single pear, which rots while hanging on the tree. This insect promises to be very destructive in Connecticut, where it now is, and I call your attention to this fact that proper care may be taken to prevent its spread. I would advise towards this that no fruit be purchased from that neighborhood. This seems to me the best manner of restricting its spread.

I would call your attention to another fact before closing, to show you how much room there is yet for discovery of even the simplest methods and remedies.

The cabbage worm has been one very difficult to deal with. In experimenting with different poisons or insecticides to apply in this case, since 1881, I found that pyrethrum is the best remedy, all things considered. We have long known that hot water may be used in applying these remedies. Last summer one of my correspondents, Mr. Irwin, of Painted Post, N. Y., was obliged in watering his cabbages to use the water directly from a spring which was icy cold, almost at a freezing temperature. He feared that the application of this would kill his cabbage plants. To his great surprise, the plants did not suffer, and the worms, immediately on the application of this cold water, fell from the plants and died.

As my remarks have already occupied so much of the time of the Board, I will now conclude by thanking you for your close attention.

A Member.—Professor, have you ever given any attention to the fire-fly?

Mr. Collings.—I would like to ask a few questions in regard to

this phylloxera. Does it move about in the ground or only on the surface, and is it confined to one place in the ground?

Professor Riley.—It is capable of moving about on the surface, and also in the ground wherever the ground is any way cracked, or where the roots interlock with each other.

Mr. Collings.—Is there anything which can be done to kill the rose bug in the blossom of the grape? I find that the blossom is so small that the poison will not reach the insect, and it eats off the heart of the blossom, or eats the grape when it is about as big as a number five shot, when I think they go to the leaves of the vine, after spoiling the grape. Last year they destroyed the crops of fully 25,000 vines.

Prof. Riley.—In reply to your question I can only say that this is one of the insects with which it is very difficult to deal. I think the nozzle I have spoken of would greatly help you in reaching this insect, for the spraying of the arsenical mixtures on to all parts of the vine will have the effect to kill all the beetles that feed on such vines. In digging in the ground I have been greatly surprised at the large number of the larvæ or grubs of this chafer in all parts of New England where there are grass roots. Hence we cannot well deal with the insect in the larvæ state. I think the best plan would be to lure them on such vines as they have a preference for, and then poison them. In my experience I have found that they like the Clinton grape best.

If I were growing grapes in this part of the country, or where these insects are so troublesome, I would plant one corner with Clintons and treat them with these arsenical mixtures just mentioned. I think by this means they could be kept subdued, except when in extraordinary numbers.

Mr. Collings.—I have tried many plans, without success. I spent \$20 last year in trying to destroy these insects. Our experience does not lead us to believe that they were produced in the ground. They appear to come through the air in great swarms. This was the case at the extreme end of this State, and we do not think they are produced in the ground.

Prof. Riley.—You are assuredly mistaken. They do come from the ground.

Mr. Collings.—They came to us on a certain day. We felt them fly in our faces and there seemed to be millions and millions of them. They came in great swarms, flying along. I went out through my vineyard one day and found none of them, and when I went out the

next day there were millions and millions of them there. Now, where did they come from?

Prof. Riley.—They rise from the ground. The conditions of the ground in early summer are often such as to bring them out very suddenly. This beetle transforms early in summer and often lies in the ground for a long time, until a warm shower will cause it to come out in great numbers. It develops in the ground without question, because I have often reared the beetle from larvæ thus found.

Mr. Collings.—Why do they attack the vineyard only in one place?

Prof. Riley.—Because they come from some place in the neighborhood where the larvæ were feeding.

A Member.—I would like to ask Prof. Riley whether the attention of the Department has been called to a new species of mildew, coming on the under side of the leaves, and looking like snow. Mr. Halstead, the editor of the *American Agriculturist*, to whom some of this has been sent, says they do not know it. It appears to be something entirely new.

Prof. Riley.—I would recommend that specimens be sent to the department another year, or to Prof. Farlow, of Cambridge.

Judge Horner.—I would like to know something about this rose-bug. The vines one side of the road of a neighbor of mine were entirely destroyed, while on the other side the crop was not injured in the slightest. They did not touch them there at all. I also hear, since last season, that it has been injuring blackberries. It had destroyed the young crops on the vine. I also understand that they did the same thing for our President, Mr. Dudley, at his mansion near that place. I have never conversed with him in regard to it, but I understand such is the case.

The Chair.—Yes, sir; mine has been destroyed for the last two years.

Judge Horner.—My theory is that you had better grow roses? A neighbor says they came from Mr. Dudley's roses and destroyed his blackberry crop.

The Chair.—They attacked my blackberries and destroyed them first.

Judge Horner.—If you grow plenty of roses you attract the rose-bugs.

Mr. Rogers.—In regard to the rose-bug, Mr. President, I have some Clinton vines in my vineyard. I can keep the rose-bugs entirely

under by taking some precautions. I think there is a great deal in getting early foliage on my vines. The sooner you get the foliage out in the Spring the better it will be for the vines. The earlier you trim the vines the earlier the sprouts will start in the Spring. I sacrifice my Clintons for the sake of the others. I have some twenty-five or thirty of these Clintons in my vineyard.

A Member.—I agree with the gentleman who has just spoken. If you can get the grapes as large as a No. 5 shot early in the Spring, it is then impossible for the bugs to destroy them. I trim my vines as early as I can.

A Member.—When do you begin to trim?

First Member.—I have men trimming nearly all winter, as my vineyard is a large one, and it takes a great deal of work to go over them. I keep men at it all winter, and they make a business of it. I do not care to know about the raising of a few roses, but I want to know how to kill the bugs. We want to know of something which will destroy the rose-bugs. If the Professor will give me some good plan, I will make it remunerative for him.

Prof. Riley.—This question of killing these bugs is just like that of beating an army. They may come in such force that it is impossible to destroy or resist them. I have known these bugs to go in such force that they would not only eat up all the Clintons, but all the other vines, too. If you will thoroughly spray the vines with the arsenical mixtures, you will destroy the bugs. I would also advise you to let the vines grow as a lure, run rampant, and not train them. In this way you may perhaps be able to keep them down.

Mr. Collings.—I think this poison or remedy should be put right on the grape, and that seems impossible. The bugs will not eat anything else until they have eaten the small grapes.

The Chair.—There is one industry which is growing up in the southern part of this State, and it ought to grow up in other parts of the State, too, and which seems to me worthy of attention. I refer to the silk industry. As the professor has given this matter some consideration, I would ask that he give us his experience in this direction.

Prof. Riley.—I feel that I am perhaps wearying the Society. [Cries of "No, no; go on."]

In reference to the silk industry, I am in favor of encouraging this industry, because it is a home industry, just as the President's address showed he was in favor of home industry.

While there is a great deal of interest shown in silk culture, after studying the subject for fifteen years I cannot advise any one to go into it. The climate and soil of this country are well adapted to the raising of the silk worm, but this country can never compete with the cheap labor of other countries like China and France. It is not the labor of raising the cocoons, but it is the labor of reeling the silk from them, which makes the silk product of this country unremunerative. We can raise silk, but we cannot reel it in competition with the cheap labor of China, France, and other countries. This is the vital objection.

No person will ever grow silk at a profit in this country, until Congress is consistent enough to make such laws as will protect this industry. Reeled silk is as much a manufactured product as the woven goods. When some protection is given this industry by Congress, it will then have a chance to thrive—and not till then. You need never expect to see the silk needed in this country produced here unless there is some encouragement given it.

One of the agents of the Department at New Orleans raised 2,200 pounds of cocoons the past year—not all himself—but through the different parishes lying around New Orleans. His experience is the experience of all those who have attempted silk culture for profit. He finds that the price obtained for the reeled silk barely covers the cost of the cocoons and the labor required to reel it.

The only thing that can be said in favor of silk culture is that it is a home industry. It should be carried on in the house just as bee keeping and butter making and poultry raising are carried on. In order to make the silk profitable the silk manufacturers of this country must be willing, either that their profits shall be less, or else raise the price of their goods so that the profits of the silk raiser shall be greater, and this they are not likely to do unless obliged to by tariff legislation.

Mr. Forsythe.—I would like to ask you a question in regard to a matter in which a large number of our people are interested. There are many people in this State who are growing cranberries. There is a small miller which is doing great damage to our crops, and we would like to know of some effectual remedy for it. There is one miller which we can kill by flooding. But there is another now, not half as large as the other, and which appears to live in the water. It is very destructive to the crop and we do not know what to do with it. It

will not die by drowning. [Laughter.] I think it lays its eggs in the water, too.

It will stand drowning. Although we can kill the first by flooding, this one will appear in the spring, and be just as destructive in the following spring. Have known gentlemen who have tried Paris green, without success. It is of a peculiar nature, and flies but a very short distance, about this far [holding his hands about two feet apart.] It is very small. I do not know whether you know anything about it or not, but would like to have some information in regard to it.

Prof. Riley.—I could not make any recommendation without knowing the insect, and I fail to recognize it from the description. A number of different cranberry worms are treated of in Bulletin 3 of the Entomological Bureau, and in my forthcoming annual report the parent of the fruit worm, which has hitherto been unknown, is described as *Acrobasis vaccinii*. If the arsenical mixtures are used when the berries are forming, you will effectually destroy this worm.

Mr. Forsythe.—This is not a cranberry worm, sir, as it gets right in the bloom. I do not think it is an American worm. It first made its appearance at Cape Cod, Mass. It has only recently appeared here. If you will come up to our section of the country, I will be glad to show you around, and will also show you the fly I refer to as doing the most damage.

The Secretary.—When I met Prof. Riley I told him I would like him to come here and meet the farmers of New Jersey, and that he would find the farmers of this State as intelligent and fair-minded a body of men as could be found anywhere in this country.

I feel sure I kept my part of the agreement. I think you will all agree with me that Prof. Riley is thoroughly conversant with the question of insects, and not only that, but with the question of farming also. I am also glad that we have with us a gentleman who is at the head of the entomologist's department at Washington, and I move you, Mr. President, that a vote of thanks be tendered Prof. Riley for the very able, interesting and instructive manner in which he has entertained us here.

The motion unanimously carried.

Mr. Burroughs.—Would you recommend the use of this emulsion on the elm trees? We cannot use these poisonous emulsions.

Prof. Riley.—No, sir; I cannot recommend this, as it is not of sufficient durability. I assure you that, with the use of the cyclone

nozzle and a half pound London purple, costing three cents, and mixed with a barrel of water, you can apply it with such force and with such fineness as to be almost invisible. The poison is also uniformly fastened to the leaves. The effect of the London purple or Paris green is lasting. It not only kills the present generation, but it affects the future generation also.

WELSH CATTLE.

BY HENRY PLATT, LIEUT. COLONEL, BANGOR, N. WALES, ENGLAND.

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DEAR SIR—I promised to let you have a few particulars of this breed by the beginning of the present year. I now keep my promise. I find the best authorities on antiquarian lore agree that the original and native breed of Welsh cattle were small and black, and are descended from the "*Bos Longifrons*," (alis *Brachyceros*). The breed is thus described by Professor Nilsson and the Rev. John Storer:

"The forehead, somewhat flat, has a very prominent ridge standing up the middle and a smaller indenting backwards, the horns are much flattened and compressed, small and directed outwardly upwards, and bent in one direction forwards. From the slender make of its bones, its body must rather have resembled that of a deer than our common tame ox; its legs at the extremities are certainly shorter, and also thinner, than those of a crown deer (*i. e.*, a full antlered stag). The skull is long and narrow, even more so than that of a deer. The rest of the skeleton is much like that of the tame ox, but each bone, in proportion to the length, more slender and thin."

Proceeding to more historic times, namely, the landing of Cæsar, 55 B. C., we find him describing the inhabitants and their customs and cattle. *Vide De Bello Gallico*, lib. v., cc. 12–14, as follows:

"The multitude of inhabitants was infinite, the edifices most pregnant, and the number of the cattle great." These cattle were the small Celtic *Bos Longifrons*. *Vide* Rev. J. Storer.

When the Romans were recalled to Rome, Wales was overrun by the Picts and Scots, and were afterwards conquered by the different Teutonic tribes, who slew the Celts and drove such as escaped, along with their oxen, the "*Bos Longifrons*," into the mountains and inaccessible parts.

Youatt says that the Scotch Kyles, the Welsh, the Devon and the

Sussex breed are its descendants. I am not prepared to assert this is so, although a semi-wild breed of black cattle existed for some time in Western Cornwall.

These invaders in the first instance, and their successors, the Danes, brought with them their wives, families and cattle, which cattle were of the "Bos Urns" type, and are the breeds of the East and North of England to-day. So that, even if the Devons and Sussex can claim the "Bos Longifrons" as their progenitors, they have long since been crossed out by intermixture with the "Urns," or, more likely still, they take their origin from cattle brought by the Belgae, who held the Southern country. *Vide* Mr. Boyd Dawkins, in his book on "Cave Hunting."

Mr. Storer writes that no discoveries have yet been made to show that the "Urns" was domesticated in Britain in pre-historic times, while the Longifrons, essentially the "Celtic Ox," was everywhere subjugated to use by man, a strong proof that the Celts knew of no other breed than their own small blacks. Prof. Low tells us that in the twelfth century a white race of cattle similar to those at Chillingham existed in Wales.

As later in my article I shall speak of the two or three different breeds of Welsh cattle, I here call attention to the fact, that individuals of this white race existing in Wales are found chiefly in the county of Pembroke, and people are still living who remember seeing them at fairs exposed for sale, and this notwithstanding every endeavor of breeders to breed them black, as white cattle were not considered so hardy as black, and there was consequently a prejudice against them.

In form and type they much resemble the "Chillingham," and are hardly distinguishable from them, even to their ears.

I find in Howel Dda's Code of Vendotian laws, written towards the end of the tenth century, or beginning of the eleventh, the first mention of their having red ears, in a law which sets forth that the King of Aberfron was paid as a fine, "a white bull with red ears to each hundred cows."

This is further corroborated in the later Dimetian Code, where we read that "the privilege of the Lord of Dinevwr is to have for his 'Saraad' as many white cattle with red ears as shall extend in close succession from Argoel to the palace of Dinevwr, with a bull of the same color along with every score."

Youatt says that the same records describing these cattle speak also

of the "dark or black-colored breed," and in a Latin translation of the Welsh laws, "one hundred white cattle were considered equal to one hundred and fifty black." No doubt because they were of superior size.

The notices of them—the ancient white cattle, with red ears, of Wales—seem to show that the localities they inhabited were principally the lower sea-lying parts of the counties of Pembroke and Carmarthen, in which last "Dinevwr" is situated, on the borders of the Bristol channel, and, also, the extreme northern parts of the country, on the coasts of the Irish sea, opposite to Anglesey, where was Aberfraw.

We have no reason to believe, from the historical notices given us, that they occupied the intermediate, far larger and more mountainous parts of Wales. On the contrary, the smaller black breed, the native cattle of Wales, possessed the country, as a whole, and has finally exterminated the others.

In South Wales it is remarkable that the white cattle seem to have been primarily derived from the neighborhood of its most westerly point; there they held their ground the longest, especially in the country round Pembroke, Haverfordwest and Milford Haven, the extreme point of South Wales. It is singular, too, that even now great osteologists like Rütimeyer consider the Pembroke cattle descendants of the *Bos primigenius*, while they class the other Welsh cattle as representatives of the "Longifrons." The same is true of the northern branch of this white race.

The Kingdom of Aberfraw was close to Anglesey and probably included it, and the cattle of Anglesey were more nearly allied to and more closely resembled those of Pembroke than any others in Wales.

One of the two things we must, I think, suppose, either these white domesticated cattle found their way into Wales by the celebrated port of Milford Haven, used in every age as a port of importation, and by the ports of North Wales, or they are connected with British Druidism, whose last strongholds were Pembrokeshire and Anglesey, or they owe their origin to both causes combined.

One thing seems to be most apparent, that they were not derived from England, and had no connection, except such as the Hungarian or Tuscan cattle had with the British wild cattle, namely, descent in remote ages from a common source.

I cannot conceive, as some have done, the possibility of the Brit-

Welsh being willing, or even able, to accumulate, during ages of internecine war, large herds of a breed of cattle obtained from their most deadly and generally victorious enemies, the Anglo-Saxons, and the improbability of such a thing seems reduced to a certainty of its being impossible when we consider, first, that these cattle have always been most prevalent in those parts of Wales which were the farthest removed from England; and then, that though the Anglo-Saxon cattle were, with certain modifications, very probably descended from the "Urns," we have no reason to suppose that they are generally white, but quite the contrary. The only accredited instance, I believe, of the Anglo-Saxons possessing domestic cattle of this color, as a race, being the "Custom of Krughtlow Cross." *Vide* Mr. Storer's book, wild white cattle of Great Britain, pages 6, 8-10.

In discussing Welsh cattle, as we find them to-day, a good beast ought to have short legs, and straight and fine in the bone, with long yellowish horns, black points and forehead, large expressive black eyes, nostrils wide and strong, muscular neck, large wide dewlaps projecting forward, expansive chest and broad shoulders, points not projecting, the ribs well sprung, likened by one well-known authority to an opened umbrella, loins broad and strong, and haunches not too wide, small round bones, tail long and neatly set on, with thick black wavy hair and a mellow touch. The appendages of the bulls and udders of the cows should be white.

The Anglesey cattle are the most prized, being heavier and retaining their old characteristics in the greatest degree, part of Camarvonshire, the sea coast of Denbighshire, also produce numbers of very fine cattle.

The high lands of Camarvonshire, Denbighshire and Merionstshire, with a few exceptions, produce numbers of smaller cattle with the same characteristics as those described a hundred years ago or thereabouts.

Montgomeryshire bred a fine race of feeding cattle, and mostly brindle in color, and in the Severn Valley, of a reddish-brown color with smoky or dun faces, said to have come from Devonshire. They seem, however, to have been gradually crossed with other breeds, chiefly the Herefords, and so have lost their Welsh characteristics.

The Pembrokeshire cattle are very similar to the Anglesey; they are, however, longer in the leg, not so good to the touch, and generally deep in front and light behind, they ought also to be quite black, even to the scrotium and udders; many of them have the hair on their sides tinged with russet-brown.

They have the common failing of the Welsh breed, though in a lesser degree, namely, a high rump. Like their brethren from Anglesey, they are very hardy, easy to fatten and attain great weights, very docile and good milkers.

They are known generally under the name of "Castle Martinus," a district lying to the southwest of Pembrokeshire. Lord Cawdor, of Stackpole Park, has long been a breeder of these cattle, and, as I am told, a good herd. They do not cross very satisfactorily with the Angleseys, which, in my opinion, goes far to prove that the two breeds have different origins. The best specimens I have seen were evolved out of themselves. The county of Glamorgan used to possess a very valuable and pure race, now extinct; of their origin, nothing certain, so far as I am able to glean, is known, but I am led to think, from perusing different authors, that they were descended from the old Welsh breed, and crossed with some Norman cattle, imported into the country in the twelfth century by a knight named Fitzhammond, who seized and held a large piece of the county.

Having discussed the history of our breed, I will now pass on to their treatment, the weights they attain and the milking properties of the cows.

Our cattle are usually left on the grass until September or October, and are then housed in yards and fed on turnips and chaff for two winters, and in the spring of their third year a large majority are purchased by English graziers, and taken to the midland counties, where their good feeding qualities have been recognized for at least a hundred years.

Mr. Lewis Morris, in his book of Charts in 1747, shows that from Anglesey alone, 15,000 head were sent to England annually; this is probably 5,000 over the mark, so to be within bounds, I take the number at 10,000, which, at the price of that time, realized £76,290. Part of Camarvonshire exported 6,000 at a value of £46,500. It is now estimated that 50,000 are sent across the border annually. At the end of summer and beginning of autumn, these cattle find their way, fat, to the London markets, where they hold their own against Scotch Polls, or any other breeds, and command the highest prices.

A well known butcher has kindly furnished me with the following particulars:

"The Welsh Runt carries in proportion to its fatness, more lean, nutritious, marbled meat than any other, without an upper layer of

fat, a failing of many breeds; a combination in which the Welsh Runt stands almost alone. With this appreciable quality, they carry also great thickness of flesh on their sirloins and chimes, without being heavy and coarse in the inferior joints. They scale remarkably well, several lots weighing in August, after four months grass and cake, 850 lbs, and those kept on until Christmas making from 1,200 to 1,250 lbs to the carcass."

In the year 1797, twenty-five working oxen were sold at the age of nine years, weighing from thirteen to fifteen score the greater, and from £40 to £50 the pair. A couple from Denbighshire were worked until October, and then fed on grass, cabbages, turnips and oats, and sold in March for £62, the best weighing a ton.

I have just given these weights of exactly 100 hundred years ago, for a comparison with the weights of the present time. During the last few years some of the leading agriculturists have been trying to improve the breed, with marked success. A two-year-old steer fed from a calf, scaled 980 lbs. dead. Several have been exhibited at our fat-stock shows, exceeding 2,240 lbs. live weight, and a few have made over 3,000 lbs. A few remarks will not be out of place respecting their loss of live weight when slaughtered, and comparison with other breeds.

One prize bullock, slaughtered Christmas, 1881, made seventy per cent. of its live weight, two others sixty-eight per cent., a Shorthorn steer sixty-seven per cent., and a Hereford sixty-eight, all being close upon a ton live weight.

In 1882, a prize Welsh steer scaled sixty-seven lbs. to the hundred, a Polled Scotch sixty-six lbs., and a Shorthorn sixty-five.

In 1883, two Welsh steers not feed for show, weighed 1,568 lbs. alive; carcass 1,040 lbs., or over sixty per cent. The Birmingham Champion Polled Scotch heifer, and the winner also of the Elkington cup, as the best beast in the show, weighed 1,774 lbs. alive, carcass 1,238 lbs. A Prize Polled Scotch bullock weighed, alive, 2,121 lbs., carcass 1,340 lbs. A Norfolk prize heifer 1,559 lbs. alive, dead 1,084.

The Champion Hereford heifer at the Birmingham show in 1883, a noted prize winner, weighed alive 1,626 lbs, dead 1,152.

I think I have quoted enough to show that Welsh steers scaled as well, if not better, than any other leading breeds.

Great numbers of Welsh cattle are also tied up and fed in their native country, and sold in the home market, where they make even better prices than in London.

As milkers the pure Welsh are hard to beat, either in quantity or quality.

Mr. Davies, in his book of Agriculture and Domestic Economy of North Wales, published in 1810, mentions a Welsh cow which gave, from May 1st to October 30th, 4,026 quarts of milk, which produced 358 lbs. (avoirdupois) of butter, being nearly equal to two pounds per day, and twenty-two quarts of milk per day for 183 days successively. He further quotes a dairy of Mr. Wynn's, of Ryton; from an average of ninety-five milch kine in profit he makes, one year with another, fourteen and a-half tons of chese.

At the late London Dairy Show a pedigree Welsh cow, belonging to Captain Ross, St. Albans, in addition to winning the first prize in her class, and the Lord Mayor's champion prize for the best cow or heifer other than pure bred Shorthorns, Jerseys and Guernseys, won the first prize for the best milking cow. Her quantity of milk was just over twenty quarts, and yielded twenty-six per cent. of cream.

My own champion cow, "Black Queen II.," milks, three months after calving, eighteen quarts per diem, and gives twenty-three per cent. of cream.

In closing my article I would just remark that we possess two herd books, entitled the "North Wales Black Cattle Herd Book," Secretary, Mr. W. Dew, Bangor, and the "Welsh Black Cattle Herd Book," Secretary, Mr. R. Hart Harvey, of Slade Hall, Carmarthen.

DISEASES OF DOMESTIC ANIMALS.

BY JAMES D. HOPKINS, D.V.S., WYOMING TERRITORY.

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MR. PRESIDENT AND GENTLEMEN—From the earliest period of which we have records, agriculture has been a most honorable occupation, and the chief productive industry of the world. In the importance of its functions, in the amount and variety of its productions, it stands supreme among earth's material interests; the one upon which all others depend. Its function is to furnish the human family with food and clothing.

If we examine the history of foreign countries, ancient and modern, it will be found that those countries which have attained a high agricultural prosperity, owe it to the enactment of wise laws fostering an industry which is the true foundation of a nation's greatness.

Agriculture is the most extensive and important industry in this country, and represented by much the largest body of citizens; therefore, it is unjust to neglect this and foster inferior interests.

Within the past twenty years the live stock interest has expanded so rapidly and reached such vast proportions as to lead all other branches of agriculture.

The opening of the immense grazing regions of our Western Territories, when it was demonstrated by a few hardy pioneers that cattle would thrive at all seasons of the year upon the luxuriant bunch grass, gave to the public an employment at once profitable, with just sufficient hazard to render it desirable; the demands of the millions for beef, on the other side of the Atlantic ocean, have been met by the establishment of an enormous export trade, and the application of science in the introduction of methods of refrigeration and the process of canning, makes it possible to slaughter our cattle at home, for the subsistence of the people in the remotest parts of the world; this, together with an immense home consumption, are factors inducing an

unprecedented activity and prosperity in agriculture and meat production.

The census of 1883 places the number of horses and mules in the United States at 14,000,000; valued at \$880,000,000; number of cattle, 37,000,000; valued at \$803,000,000; number of sheep, 40,000,000; valued at \$95,600,000; number of swine, 47,683,000; valued at \$263,543,193, which gives us a total value of domestic animals, \$2,041,543,193.

The annual income from this investment of over \$2,000,000,000 in domestic animals is more than \$1,000,000,000.

We have from two to three times the number of cattle, in proportion to population, as compared with the principal countries of Europe, and five times as many swine; nearly three times the proportional number of horses of France, the German States, or England.

From these statistics you will readily appreciate that our live stock industry is already great, and, as our Western country is further developed, will be capable of almost indefinite extension, and that this extension will depend largely upon the intelligence and wisdom of our legislators, in the enactment of laws protecting this industry from the invasion of foreign animal plagues, and by the investigation of indigenous diseases peculiar to our domestic animals, give to the stock grower the knowledge necessary to prevent ruinous animal losses.

The demand in our markets for better meat has led the intelligent stock grower to grade his stock by the introduction of improved blood of whatever strain his judgment or fancy deemed best, and the necessity of adding more female stock has obliged the breeder to go long distances to supply the demand; this, together with the increased facilities for transportation offered by railroads and steamship, renders the business very dangerous through the liability of animals in transit contracting disease by being compelled to pass through localities where contagious diseases exist.

Another source of the spread of contagious diseases is the fact that unscrupulous dealers in live stock, stimulated by the demand, for stockers get their supplies where the least money will buy them, without regard to their having been exposed to contagion. Indeed, I have seen dealers make offers for diseased cattle with the intention of selling again.

Thus, the improvements of modern times have brought with them

their penalties. The facilities for transportation of domestic animals has been so increased, owing to the large traffic in cattle, that diseases of a contagious character are enabled to travel all over the world in the avenues of commerce and spread thence to the rural districts, whereas, formerly, they were only to be found in the trail of armies, whose beef supplies were drawn from an infected country.

The diseases of domestic animals, to which I invite your attention, I shall, for convenience, divide into two classes—those that are indigenous, and the foreign plagues.

The first class includes all diseases which apparently arise in our domestic animals from unhealthy local conditions, and spread by contagion.

Glanders and farcy, influenza, strangles, anthrax, Texas fever, tuberculosis, hog cholera, hydrophobia, scabies, variola, and the various parasitic diseases.

I shall not attempt to give a full history of any of these diseases, and I regret that I am unable to give exact statistics of the mortality occasioned by them, because of the immense extent of our country, and the neglect of our government to provide a bureau for this purpose.

Glanders and farcy in the horse, and hydrophobia in the dog, are communicated to man and other animals by inoculation, causing in all cases a most revolting sickness and frightful death. During the year 1883 six people died in Illinois from glanders contracted from the horse.

Black leg, splenic apoplexy, symptomatic fever, carbuncular fever and gloss anthrax are all different forms of the same disease—anthrax. Horses, cattle, sheep and swine are all victims of this malady.

This disease was known to the ancients, and full accounts of its ravages among man and animals in the middle ages have been handed down in history. Even the present century records its ravages among the people of St. Domingo, where 1,500 perished from eating anthrax meat. Reports from all parts of our country, where animals are allowed to feed on rich river bottoms and drink water impregnated with decomposing vegetable and animal matter, show that this disease prevails to an alarming extent.

Animals dead of this disease should be deeply buried with lime, or, better still, burned. The removal of the skins of such animals should

be prohibited, owing to the great danger of inoculation to man, producing malignant pustule. Allowing the carcass of animals dead of this disease to putrify on our pastures or near the water-courses, leaves a poison which is surely fatal to the animals eating or drinking thereof.

During the past year the reports from nearly all the Northern States showed that the reckless transportation of Southern cattle had infected our stock yards, cars and vessels used in such traffic, and the mortality resulting to our native Northern cattle was immense. The inspectors of cattle at Liverpool, England, report the arrival at that port of 2,800 cattle suffering with Texas fever. Last Summer, through the importation of cattle from Texas into Brady's Island, Ogallala and Valentine, Neb., over 5,000 native cattle died of Texas fever.

This disease is an enzootic disorder, probably due to the food on which Southern cattle subsist, whereby the systems of these animals become charged with deleterious principles that are afterwards propagated and dispersed by the excreta of apparently healthy animals.

The Department of Agriculture, at Washington, has devoted much time to the study of this disease, and up to date has given but little information except maps showing the localities where the malady may be found; and will, when Congress makes an appropriation of the necessary funds, continue the investigation and give to the world its causation and cure. In the meantime, it is absolutely necessary that States desiring to secure the continued prosperity of the stock grower, should enact laws compelling railroads to furnish separate feeding yards along their routes for these cattle, to which Northern cattle would not be allowed to enter, and to disinfect all cars after the transportation of Southern cattle. These precautions would prevent the infection of Western and Northern cattle en route to market, and give to our exporters cattle free from contagion, and, at the same time, prevent the wholesale destruction of valuable property.

During the past year hog cholera has prevailed in our Western States, and we have reports of the existence of this disease in New Jersey; therefore, I present this disease for your consideration.

There are many diseases of the pig, which assume the peculiar character of cholera, but yet differ from it in many essential points, still the farmers conclude, from the number that perish and short illness, that the disease is cholera, while in reality it is only one of the many forms of anthrax, and can be prevented by the observation of sanitary

laws and feeding the animals nutritious food of the proper variety. The necessity of State legislation, in the creation of a bureau for the investigation of all outbreaks of disease among domestic animals is apparent, as rumors of widespread disease among farm stock destroys confidence and prevents commerce.

During the past six months, in Eastern Nebraska, over \$2,000,000 worth of swine died from hog cholera.

The Department of Agriculture at Washington estimates that our annual loss of swine from cholera in the Western States is \$10,000,000.

It is to be regretted that a pestilence so prevalent, carrying disaster and financial ruin to such numbers of our people, has not been made the subject of thorough scientific investigation by the different State Boards of Agriculture, and the people informed of the secret causes of the wide-spread destruction which makes hog raising, as a business, so precarious.

The tuberculosis of domestic animals and of man is identical, but that the disease is developed in man through the milk or meat is mere conjecture. The experiments of eminent pathologists prove that the taking into the stomach of tuberculous matter will produce the disease. But any one posted on farm matters, knows that when acute sickness develops in a cow, that the secretion of milk fails at once. And the only way in which tuberculous matter can gain access to the human stomach is when the flesh of a beast suffering with this disease in the acute form, is used for food. The only legislation that can prevent this, is a thorough inspection, by experts, of all meats offered for sale in our markets.

The prevention of this disease on the farm is a matter of interest to the stock grower. The remembrance of the proverb that "Like produces like," and by its practice, breeding from perfectly healthy cattle, with good sanitary surroundings, proper shelter and nutritious food, will soon render this disease comparatively rare.

Among the parasitic diseases, we find in the various tape and liver worms an interesting study. Not only on account of the pecuniary loss in farm stock, but that they are propagated in man in most dangerous forms. Verminous bronchitis in lambs and calves, due to the presence of round worms (*strongylus*) in the air passages, is a source of heavy loss on infected farms, and by its continued mortality gives rise to unpleasant rumors, until the actual cause of the sickness is pointed out by the expert.

We also have many species of acari producing scabies or mange, in all of our domestic animals. I can but briefly call your attention to these different diseases, and urge upon you the necessity of State legislation in the creation of a sanitary bureau, for the purpose of investigating all reports of contagious diseases of domestic animals, and thereby protect our farmers from the toils of empirics, and their animals from ruinous diseases.

The second class of diseases to which I invite your attention are the foreign cattle plagues, viz.: rinderpest, foot and mouth disease, and contagious pleuro-pneumonia.

We know but little of the origin of these diseases, but we know them as purely contagious.

We know that no condition of keeping or feeding of cattle will produce them, and we know that the cattle of our country can be protected from an invasion of these plagues, by the prevention of traffic in cattle, *from* or *through* localities where these diseases exist. A study of the history of these plagues in Asia, Europe, Great Britain, Australia and Africa, will convince the most sceptical of the necessity of shutting out the disease germs by the most rigid quarantines, and the losses sustained by those countries will appall the most phlegmatic.

We have never yet had rinderpest in America. But with the importation of hides and rags from Europe and Asia, and their transportation through this country, without let or hindrance, will, in the near future, surely develop this terrible pestilence.

Foot and mouth disease is the most contagious of these three plagues, affecting whole herds in a few days; when the conditions are favorable for treatment, as good shelter, plenty of help, &c., the mortality will be very slight.

It is estimated in England that the presence of foot and mouth disease in a herd cost the owner about \$15 per head in treatment of the sick, medicines and prospective profits.

This disease was imported into New York, from Canada, in 1870, and caused the greatest consternation among the stockmen.

The rapidity with which this contagion spreads from herd to herd, induces the most heroic measures to stamp it out.

In 1881, an importation of cattle from England arrived in New York suffering with this disease. They were quarantined and all recovered.

In 1882, an importation from England introduced the disease into Baltimore, Maryland. They were quarantined.

In 1884, an importation from England introduced the disease into Portland, Maine, and spread, before its character was recognized, into five native herds. The enforcement of a rigid quarantine by Dr. Bailey, State Veterinarian, prevented a further spread of the disease. The quarantine, treatment of the sick cattle, and consequential damages paid to their owners, cost Maine \$5,000.

Ten herds of cattle, over 300 head, arrived at Quebec, Canada, from England, during the past year, suffering with foot and mouth disease.

Four of these herds (139 animals) were consigned to parties in the United States. It is a matter of congratulation to all stock growers that the existence of the quarantine station prevented a spread of this plague over our whole country.

Contagious pleuro-pneumonia of cattle is the most dreaded of all the cattle plagues, because of its insidious character, its long stage of incubation and the difficulty of destroying the virus if once introduced. This disease was imported into New York in 1843, and spread through the avenues of commerce to New Jersey, Pennsylvania, Maryland and Virginia. An importation into New Jersey, in 1847, was stamped out by the destruction of the whole herd at a cost of \$10,000.

In 1859 Mr. Chenery imported four cows into Massachusetts, and the disease spreading from them cost that State \$300,000 and four years' continuous work to stamp it out, and the enforcement of the sanitary laws has kept that State free from this plague ever since.

Last year Mr. Dye, of Ohio, imported some cattle from Baltimore, Md., and this pestilence developed in his herd. Not understanding the nature of the malady, he sold a number of his herd at an auction sale, and the disease spread to all the herds into which his cattle were introduced, so that now sixteen herds in Ohio, Kentucky and Illinois are suffering from this dread pestilence, and with the activity of the coming spring trade in cattle, unless the Government prohibits the traffic, this disease will be carried to every corner of our country.

I do not wish you to think for a moment that this is an overdrawn picture. I have had a wide experience in this disease, and am conversant with all the modes of cattle traffic.

Eminent veterinarians of this country and from abroad have raised their voices and used their pens in warning legislators of the grave danger to be apprehended from an extension of this plague, and have

used every effort to arouse stock-growers to a sense of the impending danger. But the conflicting interests of stock-men and stock yards, who imagined that with restrictions placed on the movement of cattle their business would be interfered with, have stoutly maintained that no such disease existed, and have used every effort in preventing legislation, and stigmatized all who sought protection under the law as acting with mercenary motives.

I am aware that unwise laws, based on insufficient data, dictated by an imperfect knowledge of the disease to be prevented or suppressed, or laws badly carried into effect, are useless and vexatious, and bring sanitary science into disrepute.

It has been demonstrated in Massachusetts from 1860 to 1863; in Connecticut in 1878; in New York in 1879 and 1880, and in New Jersey in 1879, that contagious pleuro-pneumonia of cattle can be stamped out by the State authorities.

It has also been demonstrated that it is impossible to secure from Congress any law or money to do this work. Therefore, I would respectfully urge upon this Board the necessity of using every effort to secure the enactment of State sanitary laws for the purpose of stamping out of contagious pleuro-pneumonia already among the cattle of this State, and to assist the farmers in preventing an extension of contagious indigenous diseases.

DISEASES OF DOMESTIC ANIMALS.

BY W. B. E. MILLER, D.V.S., CAMDEN, N. J.

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MR. PRESIDENT AND GENTLEMEN—Owing to the want of time I have been unable to prepare an address such as I should liked to have done on this occasion. I have, therefore, collected together a short history of the contagious and infectious diseases of our domesticated animals that have been most prevalent during the past year, and hope to be able to, at least, show the necessity for better sanitary measures, if not for more stringent legislation in the matter.

The first to which I will call your attention is glanders or farcy, a highly contagious disease of the equine species, and capable of being inoculated into the human system. It is characterized by at least three principal symptoms, namely: Discharges from the nose, swelling of the submaxillary lymphatic glands, and certain peculiar ulcerations appearing upon the mucous membrane of the septum of the nose. Whenever these peculiar symptoms, or any two of them, are found well defined, they are sufficient evidence upon which to diagnose a case of glanders. The discharges from the nose, although the most conspicuous of these three symptoms, is really the least characteristic, and of the least value in diagnosing a case, because of the fact that there are many other diseases in which this is a prominent symptom.

It is true the discharge of glanders is, as a rule, somewhat different in appearance from that seen in other diseases, but is, nevertheless, sometimes hard to distinguish. The other symptoms, however, are sufficiently characteristic to warrant the veterinarian in condemning the animal. This disease is dangerous on account of the owners or drivers of the animals being continually exposed to it through the medium of inoculation. And when once inoculated into the human system is necessarily fatal. Farcy is a name described by some persons (or even authors) as another disease. Modern authors, however,

refuse to adopt and sanction this opinion, and of recent years it has been recognized as one form of glanders which develops in the subcutaneous tissue, and in the lymphatic glands immediately connected with the same. "Nasal glut" is another convenient form of the disease that horse jockeys adopt to screen themselves from the law. In this form it is most common in the respiratory passages, organs, &c. This disease has been found in several sections of the State, and in some counties it has raged quite extensively, thereby involving much loss to the owners, as treatment amounts to nothing; slaughter being the only expedient.

TUBERCULOSIS.

This disease, although not strictly confined to the bovine species, is, in my opinion, more prevalent among cattle than in horses or other animals. It has been a matter of some doubt concerning its character. Most, if not all authors, doubt its contagiousness, and some even assert that it is not infectious. It is generally admitted, however, that it is often of hereditary origin. In whatever way explained, it must also be admitted that from a comparison of data and facts connected with its history, it has been and still may be propagated from the actually diseased to the healthy. The conditions are close and intimate cohabitation, partaking of food from the same boxes or mangers, bad sanitary conditions, especially close confinement in illy-ventilated stables, previous diseases, prolonged lactation, &c.

The symptoms of the disease are, at first, somewhat obscure, but as the disease progresses they become more apparent. The earliest discovered—a dull appearance, unthriftiness, irregular appetite, a dry cough, coat rough and turned toward the head. If a cow, and pregnant, liability to abort. If not pregnant she is liable to remain barren for some time. Her milk will be thin and watery in appearance, discharges sometimes copious, foul smelling and mixed with pus. At others, very dry and hard, and voided with difficulty. With these signs there is steady loss of flesh, the cough increases, discharges also from the nose in many instances.

If the disease is chiefly pulmonary, there will be dullness on percussion over portions of the lungs, together with an absence of respiratory murmur over the dull localities. The lymphatic glands, especially those of the maxillary, thoracic and inguinal regions, will be found enlarged and tumefied, and sometimes, but not as a rule,

dropsy of the chest and abdominal regions are present when the case approaches a fatal determination.

The interest that centers in the presence of this disease among our dairy herds arises from the fact that there are grave doubts as to the advisability of using the flesh and milk from affected animals for food, and the danger of transmitting the disease thereby to the human family. Certain it is that both flesh and milk have been shown, by numerous experiments made, to be deficient in quality, and some authors claim that the disease may be communicated through this medium. In view of this danger, the health authorities in some of our large cities (Brooklyn for one) have taken steps to prevent the sale of milk from dairies wherein are kept tuberculous subjects, and the meat inspectors at the slaughter-houses have been intrusted to condemn the carcasses of all such cases that are slaughtered under their direction. It is a fact beyond question that there are many cases of this disease throughout the entire State. Many of them, of course, unknown to the owners as such, yet, a careful investigation cannot fail to reveal them.

There are many cases, also, coming into our markets as bologna beef from adjoining States and from the West, that are unfitted for food of any kind. Within the past four months no less than three car-loads have arrived at the stock yards of Jersey City and New York, two of which, at least, were killed and disposed of for food.

These facts call for more stringent measures on the part of our health authorities, as cases of this disease are butchered in the cities weekly, which *I* would surely condemn if *I* had the power.

ANTHRAX.

A contagious and infectious blood disease, which rages in both an epizootic and enzootic form, attacking horses, cattle, sheep, swine, poultry and dogs, and may be transmitted to man.

It is generally more prevalent during the spring and early autumn months, but may attack at any season of the year. It is also more liable to occur in sections of the country where there are low marshy lands, river valleys or rich bottom lands adjoining streams of water; damp, foggy or wet weather is said to be an accelerating cause. It is claimed by some to be of miasmatic and local origin. The virus of which is not volatile, but fixed. You can inoculate the human system

with it by skinning or dissecting dead animals; or by getting the extravasated blood into wounds upon the hands or person. Dogs or pigs eating the flesh of dead carcasses, or animals drinking from streams polluted with the poisoned virus may take the disease, which is rapid in its course, and generally proves fatal in a few days. Animals dying from this disease do not seem to have perfect rigor mortis, and very soon putrify; therefore, the necessity for immediate burial. As a short definition or description of anthrax, I may, with propriety, say, it is an acute, infectious disease, generally enzootic, characterized by the rapidity of its development—generally fatal termination—and by the visible alterations in the blood, which is viscid, dark-colored and indisposed to coagulate, and which in many cases before death is crowded with minute organisms known as bacteria, believed to be of vegetable origin, and capable of inducing a similarly diseased condition when introduced into the blood of many other creatures.

Although not so prevalent as during some previous years, this disease has raged quite extensively in some sections of the State. Especially has this been true among poultry, and the losses thereby have been severe.

SWINE PLAGUE OR HOG CHOLERA.

Swine plague or hog cholera, as it is commonly called, has been very prevalent in nearly every county in the State; its ravages have been severe in Atlantic, Salem, Gloucester, Camden, Burlington, Mercer, and in some parts of Monmouth and Middlesex; many farmers who owned large herds, having lost nearly the entire number. It is a disease peculiar to swine, and is communicated from one animal to another by direct and indirect infection. It has usually a sub-acute course, is extremely fatal, especially among young animals, and exempts neither sex, age or breed. It is more fatal in herds that are crowded together in sties, pens and small yards. The morbid process, although in all cases essentially the same, is not restricted to a single organ or to a set of organs, but can have its seat anywhere in the tissue of the lungs, in the pleura, the pericardium, the heart, the lymphatic system, the peritoneum, in all the mucous membranes (especially in those of the intestines), in the liver, the spleen, and even in the skin. Only the pulmonic tissue and the lymphatic glands are invariably affected.

The symptoms, although presenting certain characteristics, vary somewhat in different cases. Even in the same herd, these variations sometimes appear, and of course much more so in different herds. As a rule the disease is ushered in by a chill or shivering fit, lasting at times for several hours, generally, however, of short duration. Frequent sneezing and coughing are also noticed. The temperature of the body is increased, the thermometer indicating from 104° to 108° Fahrenheit, or even higher. The appetite lessens, and often disappears entirely. The hair becomes roughened and stands erect. The ears droop and hang heavily at the side of the head. Indisposition to move around, followed by a desire to hide themselves beneath the bedding or behind some darkened place, and to remain obscured. The eyes look dull and languid, and often become dim, followed by swelling of the eyelids and partial or total blindness. The head also becomes swollen. Eruptions appear upon the nose, ears and other parts of the body. Not a few cases seem to have brain trouble combined, and when disturbed seem unable to navigate. The breathing is rapid and laborious; in many cases constipation, in others excessive diarrhoea. The animal stands with back arched, and appears tucked up at the flanks. There may, also, be a vitiated appetite, and the desire to eat dirt, dung and saline substances. Sometimes they discharge from the nose, which, together with the excrements, has a peculiar foetid smell that is characteristic of the disease. The color of the faeces, if the animal is costive, is a grayish or brownish black, and if diarrhoea is present, greenish and mixed with blood. The skin of the animal, especially on the denuded portions between the legs and on the lower surface of the body, behind the ears, and even on the nose, exhibits numerous red spots varying in size from a pea to that of two or three inches in diameter; as the disease advances toward a fatal termination these spots assume a dark red, and finally purple color. Weakness in the hind extremities, the animal walking with a staggering gait when compelled to move. Emaciation and general debility follow in rapid succession, the skin becoming wrinkled, dry and hard, or sometimes covered with a cold clammy perspiration as the disease approaches its fatal end.

Thus far all treatment adopted has proven of little avail. Sanitary measures have been the most productive of good results. Isolation of the healthy animals on lands or in pens not hitherto used or occupied by the diseased animals; perfect cleanliness, together with the

use of disinfectants, are also favorable to a healthy termination. Whenever an animal becomes infected, at once remove the others to another non-infected locality, and use prophylactic measures to prevent, if possible, their infection.

All litter and straw in which the sick animals have quartered should be carted to a convenient place and burned, and the pen or yard from whence it was taken thoroughly cleaned and disinfected. Care should be taken by the attendants in going from the pens containing sick animals to those of the healthy, and the clothing worn by them should be carefully disinfected after leaving the diseased premises, or cast aside entirely, while in attendance upon any others (uninfected). That swine plague is a co-infectious disease, that can be communicated to healthy animals, has been clearly demonstrated by Prof. Salmon, in his experiments made for the Department of Agriculture at Washington. It has further been proven that an exceedingly small quantity of an infectious or contagious substance (blood semen or exudation), for instance, is sufficient to produce the disease, if inoculated into, or directly absorbed into the vascular system. It has also been shown that the morbid products will convey and give to healthy swine the disease, if said products are consumed by them. Taking into consideration these facts, too much care cannot be taken to keep the healthy animals in cleanly quarters, to prevent the accumulation of filth and litter in the pens, and to feed them with food that has not been thrown upon the ground or in troughs where any diseased swine have been kept, from which the contagious principle or baccilli of the disease can be dissipated.

PHTHISIS PULMONALIS VERMINALIS, HUSK OR HOUSE, WORMS IN
THE LUNGS, STRONGULUS FILARIA.

This disease, which is generally prevalent during the late summer or autumn months, has raged quite extensively in some counties in the State during the past seasons. It commonly attacks young animals—lambs and calves. The latter are peculiarly susceptible, especially that class known to us as grass calves, most of which come from adjoining States, chiefly from New York. The symptoms of the disease manifest themselves very plainly. The animal coughs and sneezes frequently, particularly if forced to move. Respiration is accelerated and rendered difficult. Mucous discharges from the

nose and mouth in most cases, rapid emaciation, impaired appetite, indisposition to move around, animal stands with back arched, nose slightly extended and breathing accompanied with a grunt in many cases.

To those unacquainted with the true nature of the affection, it is often mistaken for contagious pleuro-pneumonia. The differential diagnosis, however, is easily made by examining the mucous discharge which is coughed up by the animal, as, in most cases, the presence of the parasitic worm is found therein. These worms are white in color, thread-like in appearance, and range from one to three inches in length. They congregate in great quantities in the bronchia and in the air passages of the lungs after filling the entire passages to such an extent that respiration is altogether impaired; their presence, finally, producing suffocation and death. This disease is generally confined to low, damp districts, river bottoms and rich pasture lands, where the grass grows rapidly and good. The prevailing opinion among veterinarians is, that the infectious principal germ or parasite, having once infected one animal, is carried or deposited upon the grass, or in the food, and is then taken up and deposited in the air passages, or in the mouths of others, and is by them again thrown off, thus keeping a center of infection, constantly supplying new subjects so long as the stock is kept upon pasturage once infected. Treatment is serviceable in this disease. The healthy animals should be removed from the balance of the herd, the sick confined in a close stable and caused to inhale the vapors of turpentine, sulphur, carbolic acid, or chlorate of lime. Turpentine administered internally is also recommended, to which might be added a small quantity of lime water. Santomine is highly spoken of, but is too expensive. The losses to farmers in some sections have been heavy, one man in Salem county having lost twenty-eight out of fifty-one animals, purchased in West Philadelphia, September 6th last, besides five killed by government and State authorities. (See letter.) Two or three others in Burlington county have also suffered severe losses.

PLEURO-PNEUMONIA—CONTAGIOUS LUNG PLAGUE IN CATTLE.

A contagious febrile disease peculiar to the ox tribe. It is of especial interest to us on account of its presence with us, and the danger to which we are exposed from the traffic in cattle from adjoining States,

where the disease is thoroughly located. It was originally of foreign origin, having been brought into this country by the importation of Dutch cattle into Massachusetts in 1848-49. It spread rapidly over portions of that State, and was only exterminated by the most stringent measures for quarantine and slaughter. This disease appears to have periods of ravage and then of cessation. It is more rapid and destructive in new countries than in more densely populated, or where it has longer obtained a foothold. It appears to have peculiarities about spreading unlike any other disease of a contagious character.

Definition.—It is an insidious exudative zymotic disease, due to a specific poison peculiar to the bovine species, and having its local manifestations concentrated in the lungs and pleura.

Symptoms.—The earliest symptoms are liable to pass unnoticed. The first that can be observed is the elevation of temperature. The thermometer in this disease is the only true guide by which we are able to discover the end of the incubative and the beginning of the active stage. It is, therefore, of great importance during an outbreak of this disease that thermometric observations be kept up at least weekly, in order that stock owners might be warned in time, and isolate every animal showing a rising abnormal temperature. In a suspected herd every animal having a temperature above 102-103 should be carefully watched and kept by himself. If the heat rises there can be but little doubt that the suspicions will be well grounded. The obvious symptoms are slight shiverings, standing coat, loss of appetite to some extent, diminished secretion of milk, bowels rather constipated, an occasional dry hard cough, scanty urine, dark in color, arched back, pressure over the parts produces pain, the animal stands with hind legs well drawn up under the body, and sometimes knuckles over on one or both hind feet.

Later on there is a watery discharge from the eyes and nose, loss of flesh; the cough becomes harder and dryer in character, but is not the painful cough of pleurisy; rumination becomes irregular; the pulse becomes accelerated and of feeble character; sometimes a large, soft pulse, sometimes a small, wiry one; respiration is increased and difficult, and the animal endeavors to facilitate the process by extending the nose and neck in nearly a straight line; each expiration is accompanied by a low moan or grunt. Pressure between the ribs, immediately behind the elbows, gives rise to pain and a low moan is uttered. The animal stands, most of the time, with elbows turned out, in order

to give greater capacity to the lungs. When she lies down, if at all, the right of the body is thrown upon the sternum. Auscultation of the lungs will not detect a friction sound caused in the first stage by the surfaces of the dry pleura moving upon each other, and in the more advanced stage from being roughened by deposits of febrine. These friction sounds are accompanied by others which indicate that the disease is not confined to the pleural surfaces only. Thus we have crepitation, both large and small, indicative of inflammation of the lung connective tissue, with ronchus and silabus denoting bronchial disease. When the disease is confined to one lung, the respiratory murmur is increased and louder than natural in the healthy lung, owing to its having to admit more air than when both lungs have full play. The healthy side will be resonant, the diseased one dull, on percussion. As the disease advances and the lung enlarges and solidifies, the ribs will be pushed out on the diseased side, and the animal will appear rounder and fuller in consequence. If gangrene occurs the discharges from the nose become sanious and foetid. As the disease progresses all these symptoms become aggravated until death finally relieves the victim.

Treatment.—Seldom, if ever, will any enlightened practitioner attempt medicinal or curative treatment. One reason for this is the danger of keeping infected stock; for never can an apparently recovered case again become a sound animal. The only legitimate treatment is “slaughter.”

POST-MORTEM APPEARANCE.

When the thorax is opened, one of the most extensive and attractive signs of the presence of the disease is the extensive amount of fluid—amounting, in several instances, to several gallons. Floating through it are large flakes of a yellow mass, known as plastic or coagulated lymph—the result of the active inflammation that has been going on. As the ribs are raised, opposition is felt, due to the union by the plastic lymph on the surface of the lungs to the inner sides of the ribs and generally to the pericardium and diaphragm. These adhesions constituting the so-called false membranes, are described by an eye-witness as looking like Niagara Falls in winter-time. On removing the lungs, they are found to have become enormously heavy, weighing from fifteen to seventy-five pounds, the normal weight of which is from three to six pounds. The lungs of healthy animals will float in water and are of a bright salmon color, while those of a pleuro-pneumonia subject sink

to the bottom and are of a dirty, dark gray color, roughened in appearance, and when cut into are hardened and almost solid, and when exposed the appearance is mottled like marble or old-fashioned Castile soap, as described by an observer. But enough has been said about this disease, the symptoms and lesions, of which I have no doubt many of you are familiar. Of its contagious character, there can no longer be any manner of doubt. Of its presence with us, I need only refer you to the following preliminary report of the commission appointed by the Department of Agriculture to investigate the extent of the disease on Long Island, in and around New York city and in Jersey City and Staten Island. I had the honor to be the first to begin the work, on or about the 16th of June last. The report embraces work done from that time until the 1st of November, 1884, and is as follows :

“PLEURO-PNEUMONIA IN CATTLE.

“*Report of the Commission Appointed to Investigate the Matter.*

“Veterinary inspectors, acting as agents of the new Bureau of Animal Industry of the Department of Agriculture, have since July last visited the stock yards, stables and other places devoted to cattle in this city, Brooklyn, Long Island and Jersey City for the purpose of ascertaining the condition of cattle brought here for slaughter or for dairy uses, with special reference to the amount of contagious pleuro-pneumonia that was harbored here. Dr. Loring, the Commissioner of Agriculture, authorized the importation of a lot of sound Canada cattle, which were put on Barren Island along with cattle found hereabouts which were diseased with pleuro-pneumonia. This was done to help on experiments looking to the isolation or extirpation of the disease.

“The inspectors a few days ago submitted a preliminary report to Dr. Loring, who came here from Washington, which says that the municipal and health authorities and managers of the stock yards lent their help to the investigations. Their attention was specially devoted to the location, cleanliness and ventilation of the yards and stables, the amount of exposure to disease and the history of the cases examined. The report says :

“‘In 758 stables in New York city, containing 3,818 cows, there were found 26 cows infected with pleuro-pneumonia. On Long Island 1,813 stables were inspected, and among the 10,072 cows confined in them there were found 325 cases. In 555 stables on Staten Island, containing 3,857 cows, there were found 12 cases. In 13 stables in New Jersey, containing 180 cows, there were found 8 cases. In the Jersey City abattoir, 39 visits discovered 13 affected animals. In the New York offal dock, out of 63 post-mortems 20 were found to be cases of pleuro-pneumonia.

“‘In the slaughter-houses of New York and Brooklyn, 26 animals were

examined and 14 were cases of the disease. In many instances of re-inspection it was found that the animals diseased on first inspection were dead and the cases which presented themselves were new ones. The result of the investigation has been to give a definite idea of the extent of the disease and to secure great improvement in the condition of the stables.'

"The contagiousness of the disease has been proven beyond a doubt by experiments on Barren Island, and the report continues: 'We are of opinion that all possibility of communicating the disease by decomposing and steamed animal matter, at or near station, is not to be feared in any degree, and in this opinion Prof. C. F. Chandler has expressed to us his concurrence.'

"The report was signed by Surgeons L. McLean, William B. E. Miller, C. B. Michener, Thomas J. Herr, James W. Hawk and W. Whitfield Rowland; General George R. Vernon and Robert Farley, Inspectors, and Dr. J. B. White, of the New York Health Board. Prof. Chandler and Dr. Raymond, of the Brooklyn Board, also attended the conference."

From November 1st, 1884, until the present time, our inspections have been confined chiefly to the counties of Hudson and adjoining counties in New Jersey, and many infected stables have been discovered and diseased animals found therein. The disease also made its appearance in one or two herds in Camden county, caused by the purchase of infected animals at the West Philadelphia stock yards, which were said to have been brought from Lancaster county, Pennsylvania.

MEANS TO BE ADOPTED TO PREVENT THE FURTHER SPREAD OF THIS DISEASE AND THE ERADICATION OF IT AND ALL OTHERS OF A CONTAGIOUS OR INFECTIOUS CHARACTER (ESPECIALLY SUCH AS ARE OF FOREIGN ORIGIN) FROM THE STATE.

Owing to our geographical position we are peculiarly subjected to the danger of infection. Lying as we do directly between the two great cities of New York and Philadelphia, all cattle traffic between the two must necessarily pass into and across our State. Again, nearly all the stock dealers who dispose of the same within our borders, purchase the most, if not all of them, at the stock yards of either one or the other of these two cities, and as it is almost practically impossible to trace the origin of the stock beyond the stock yards, in most instances, you can readily see how easy it is for infected animals to be brought into the yards for sale, and to find their way thence into our State. In proof of this assertion I need only to say that *nearly every case of contagious pleuro-pneumonia* found in the southwestern portion of the State for the last three years came with

cattle purchased in the Philadelphia or Baltimore stock yards, which brought the infection with them and diseased our hitherto healthy herds.

You may ask, how is this to be remedied? I will frankly admit that under the laws, as at present existing, it will be hard to accomplish, but the laws should be so altered and amended as to provide against any such danger. A system of strict border quarantine against animals from other States, unless said animals were accompanied with a clean bill of health properly certified to before shipment. Every animal coming into the State without such certificate should receive a thorough examination at the hands of competent men. Owners of all such animals (whether apparently healthy or not) should, after purchasing the same and taking them to their farms, keep them by themselves until a sufficient time had elapsed to warrant the belief that they were perfectly healthy. And if any animal should not prove to be so, the owner should at once notify the State Board of Health and request an examination, in order to ascertain the nature of the sickness. Should the disease prove to be contagious in its character, and particularly if pleuro-pneumonia, all diseased animals should be at once slaughtered. A rigid quarantine must be placed upon all affected herds, and all suspicious cases isolated and carefully watched. All healthy cattle upon the premises, or in any way in danger of exposure should be at once inoculated wherever it could be done properly, as a preventive measure, and as a means of saving expense to the State and loss to the individual owner.

The State Board of Health, under whose authority all matters pertaining to contagious diseases of animals have been placed, should be given greater powers, especially in the slaughtering of diseased or exposed animals, and payments made by the State for animals slaughtered should be made in full to the amount of the appraisement, and not for any portion thereof, as is now the case under the law. "Glanders and tuberculosis" should be included among the diseases for which payment should be made, inasmuch as they are each alike dangerous to both man and beast.

The veterinarian appointed should be a *member* of the State Board of Health, or should at least be invested with the same power and authority as any member thereof. If he is competent to make investigations, he should also be enabled to judge as to the best means to be employed to eradicate any disease that he may investigate. If the

duties employed all his *time* he should receive a sufficient salary from the State for his services, and not be compelled to devote any portion of said time to private practice, as one duty must necessarily conflict with the other, and neither can receive the proper care and attention which they should demand. As our law is at the present time, the State Board of Health is limited in the amount of its expenditures, in consequence of which it has been compelled to exercise great caution and economy, and to the able Secretary, Dr. E. M. Hunt, who has been very active in this matter, much credit should be given. Whatever of good has been accomplished is entirely due to his indefatigable efforts. Much has been done toward the extermination of the contagious and infectious diseases of live stock from portions of our State, and to prevent the spread of the same to localities wherein they have not hitherto existed. And in conducting this work Dr. Hunt has proven himself equal to the emergency in every instance. But with the limited means at his command, and the provisions of the law regulating inspection, quarantine and slaughter, as they do, the work has been, and must necessarily be, imperfect in many respects.

CONTAGIOUS DISEASES OF ANIMALS.

BY DR. E. M. HUNT, SECRETARY STATE BOARD OF HEALTH.

CONTAGIOUS DISEASES OF ANIMALS.

BY DR. E. M. HUNT, SECRETARY STATE BOARD OF HEALTH.

At the close of our last report as to contagious pleuro-pneumonia we had released from quarantine the herds in Hudson and Essex counties, but held those in Union and Hunterdon counties. During the spring months it disappeared from these, and but one newly-affected herd was reported. In April there was a recurrence in one herd in Hunterdon county, the owner having, after release from quarantine, but contrary to our advice, purchased new cattle and placed them with the former herd. In one of the herds near Elizabeth there was, also, one newly-purchased cow that showed the disease. A herd of seventeen in Essex county had two cases in April, and it was found necessary to advise the inoculation of the herd. Two farmers near Linden, Union county, also had a few cases. The tenacity with which it clings to dairies in which it once occurs is often illustrated. Our greatest trouble arises from the failure of owners to follow accurately the details of management or from the purchase of new stock. If an animal happens to recover, and is permitted, after fattening, to go to the butcher, the owner generally prides himself upon his ability to cure the disease, and thanks neither nature nor the State.

In May we had, in all, but four places of quarantine.

The veterinarians were very watchful over reports and cases, and the general vigilance over the disease has increased. Many herds are visited on suspicion or because their owners have feared some contagious disease. Much addition has been made to the labors of the Board by the cases of glanders that have occurred in the State. As the law makes no provision for appraisement in glanders, classifying it with hydrophobia, as a nuisance to be abated by the owner, the general law as to contagious diseases was inoperative, except for purposes of quarantine. The last Legislature, early in its session, passed a more

stringent law. It soon became the duty of the Board, under notification from the local Board of Health of South Orange and of various citizens, to seek an examination of the car stables at South Orange. The cases were embarrassed by the fact that the owner of the stables was afflicted with hostile veterinary advice, and that the disease was being retained because of mistaken diagnosis of the disease. When, after some delay, we gained access and expert examination was made, the disease was discovered, and one of the veterinarians in charge joined with the State in claiming that four horses should be destroyed. J. W. Howle, D.V.S., of Newark, was placed in charge in behalf of the State, and thorough examination made of all horses and of the premises from time to time; although stables so long affected and so large a stock afforded great embarrassments to a stamping out of the disease.

In Hunterdon county a farmer was also so unfortunate as to get the disease among his horses, and four had to be destroyed. During all the summer months the South Orange horse car stables required oversight. The old history of glanders was repeated from time to time, in the occurrence of suspicious or undoubted cases. About the 20th of June another horse was killed, and the examination of all the horses repeated. A doubt was felt on the part of the veterinarians, whether the present stables can ever be permanently rid of the disease.

In the care of contagious diseases among cattle, the Board has been especially troubled in Union county. Not only were cattle inoculated in herds affected without the knowledge of this Board, but the disease was introduced into a sound herd. It became necessary to seek presentment from the grand jury, and to threaten indictment in case of further trouble. Several herds in Union county had the disease, but it did not spread from the one township chiefly affected.

In Hunterdon county, also, one township had several herds affected. The co-operation of owners did not prevent some concealment of cases, which were, after a time, traced. It must, ere long, become the duty of every township and city Board of Health, to have full oversight of herds of cattle, and be able to report any cases of sickness. Where this course has been followed we have been very successful in getting rid of contagious diseases.

In Newark, Essex county, about June 21st, a herd was discovered to be affected which required the immediate slaughter of six animals, and the inoculation of the remainder. Here, as generally, the disease

was traced to a cattle dealer. While we have been able to prevent a general prevalence of pleuro-pneumonia, we never shall be rid of it until cattle dealers are licensed, or in some way held responsible for the animals they sell, and until we are protected from traders who buy up diseased herds and bring them into the State for distribution.

Several outbreaks of swine plague have occurred in this State, our attention having been chiefly drawn to cases in Hopewell, Mercer county, and near Scotch Plains, and in Union county, up to this date.

During the summer a bill was passed Congress appropriating moneys for inquiring into contagious diseases, but making no provision for the eradication of such diseases. Like all half measures, it will result in the spending of money for inquiry, but as there is no provision for dealing with the results, the State still has to deal with all cases found.

This Board gave facilities to the Agricultural Department to prosecute inquiries in the State, and to extend them if need be, but respectfully draws attention to the inadequacy of the measure, since it does not provide for the ultimate extinction of the diseases.

In the month of July, a localized outbreak of pleuro-pneumonia occurred near Hightstown, in Mercer county, but it did not spread from the first herd. In August and early in September, it was found necessary to quarantine one herd in Hunterdon county, and two in Hudson county. Examinations into other herds reported to have the disease, proved to be erroneous. The herds in Hudson county were so badly managed that it was found necessary to have a special officer to guard the quarantine until greater protection could be secured by inoculation. The various reports as to the spread of the disease in the West led us to more rigid measures, but we believe there has been little increase of the disease in this State, except in Hudson county, and this chiefly owing to a relaxation in the law of New York.

After a long and troublesome contention with the outbreak of glanders in the South Orange car stables, it was a great pleasure to the Board to be able, September 19th, to remove the quarantine. While it is probable that the disease will still linger for a time in and about Newark, the powers given under the present law will greatly aid in its suppression.

A case that has recently occurred near Trenton was also disposed of by slaughter, with the consent of the owners, and the premises disinfected. Careful post-mortems were made of cases of swine

plague, in Gloucester county, which fully confirmed the diagnosis of the disease.

During October, the veterinarians in charge of the herds in Hudson county were watchful as to a few other suspicious herds in that vicinity, and found it necessary to extend the quarantine.

Also, two or three cases occurred in a valuable herd in Camden county, which aroused suspicion, but on early isolation prevented spread even to other cattle in the herd.

Some obscure cases occurred in a herd in Salem county, which required several post-mortem examinations, since the lungs were very much affected. The result, however, showed that the inflammation was caused by a parasite, and that the disease was the one caused by the *strongylus micruris* species of parasite invading the lung and known as hoose. The diagnosis relieved the anxiety of the district, as it was supposed to be pleuro-pneumonia.

At about the same time there occurred cases of Texas cattle fever, which, as usual, happened in some purchased stock.

All these diseases are so uniformly purchased that it is hoped that stock dealers and farmers will eventually learn never to put newly-purchased cattle with the other stock, or into stables or yards occupied by the general herd.

During all the month of October, in addition to the distribution of the circulars of the Board, as to swine plague, by the veterinarians of the Board, the calls for it have been frequent from various parts of the State. The disease prevails to a large extent in several of the counties.

Early in November, a plan before arranged was carried into execution. Under a law passed by the last Congress, the general government was authorized to investigate as to pleuro-pneumonia. As Hudson county is so near to New York City, and infested with some unreliable milkmen and cow dealers, who buy inferior cattle, or keep cattle in a most filthy condition, we were glad to have an extended system of inspection of all herds such as could not be well carried out by us. This was the more important, because our recent experience with some herds in North Bergen township led us to believe the disease quite prevalent there. The earliest inquiries of the veterinarians were directed to this vicinity, and several herds were found infected. They were promptly quarantined in order that they might be dealt with according to the acute or chronic character of the cases.

As the investigation provided for by the general government was an aid in the location of the disease, we quarantined all herds found and resolved to deal with them as if the knowledge of the disease had come to us from any other source. Several herds in Hudson county were thus quarantined and several cattle killed. As there were some special difficulties to contend with, we also called to our aid the township committee of North Bergen township. It was as apparent to them as to us that this pest is maintained in this State mostly by dairymen and dealers located either within city limits or in townships adjacent thereto. Our experience shows us that when we get rid of the disease in one locality it is ere long introduced into another. What we have seen and what scores of others have seen of the dangers of disease from these cattle, of the way in which dairies are kept, and of the kind of meat and milk thus sent to market, makes it most evident that no cattle should be kept in any city limits or in townships adjacent to large cities without register and a small charge for permit, and that there should be sanitary inspection of all such yards by those having authority to enter complaint and abate improperly-kept premises. There is also great need that all slaughter-houses be inspected, or better still, that there be a public abattoir where all animals can be open to inspection. Few have any idea of how much unfit meat gets into our markets, and how much evil comes to the wage classes and to others therefrom.

It is also found that the most dangerous dairies are those kept by persons who have little or no land; who locate in cities or adjacent townships and depend upon grain, cotton-seed cake and a forced system of dirty cow-keeping to supply the market with milk. It is not only an unfair competition with fairness, but a constant danger to the health of the people. Of the work of the year we have occasion to speak with mingled discouragement and satisfaction. The variety of maladies with which we have met has exceeded that of any other year.

We have had to contend with the most serious outbreak of glanders that has ever occurred in the State, and with a number of isolated cases. The law has been fully applied and with success. The swine plague has prevailed extensively in many counties of the State. Those who have closely followed our instructions have been able to limit the disease, but as no medicinal remedy is known the contagion has been widespread and the losses have been large.

Hoose and husk, a bronchial disease especially of calves, has occurred in some herds.

Tuberculosis has affected a very valuable herd in this State. The Board has given all the aid that it possibly could to the owner and has guarded against its transmissal to other cattle in the same herd as far as possible.

Texas cattle fever has occurred to a limited extent in the western and southern parts of the State.

Pleuro-pneumonia has been almost confined to three or four counties, but in these has required the greatest watchfulness. While we are able to do very much in preventing its spread, we say now as we said last year, that the disease can never be fully removed so as to stay removed from us, so long as there are such inadequate relations as to traffic in cattle between States, so long as Jews, Cretes or Arabians can keep dairies and kill and sell meat as they choose with so few to molest or make them afraid. Diseased and fatless cows, uterine calves, and milk from which filth is strained at each milking by the teacupful, are but the extremes of a carelessness that attaches to four out of five of the many dairies left within cities or just outside the suburbs. Until explicit law, with large police power, commits to proper officers the care and inspection of all such sources of food, we may do much to restrain but cannot do much to abate. It is hoped that ere long some such provision will be made and thus our people be better secured both as to meat and milk supply, and our farmers and stock raisers be better protected from those enzootic and epizootic diseases, which, starting from such breeding nests, spread to good and cleanly herds and bring great disaster to one of the most important industries of the State.

During the year the Board has issued two additional circulars, viz., one relating to swine plague (pneumo-enteritis), and the other to parasitic bronchitis (hoose or husk) and tuberculosis. The former animal circulars have been revised and added to, and all the series put together into a pamphlet of fifty pages. The Secretary has devoted much time to their preparation, and they have met the approval of competent veterinarians. The two last published will be printed with this report, and all in one can be had on application by postal to the State Board of Health. They cover the entire range of contagious diseases as they have appeared in this State.

The names of the veterinary inspectors who have been in the service of the Board the last year are as follows:

C. K. Dyer.....	Mount Holly.
J. Gerth, Jr.....	Newark.
J. W. Hawk.....	Newark.
W. P. Humphreys.....	Elizabeth.
J. Leathermann.....	Clinton.
Wm. H. Lowe.....	Paterson.
Wm. B. E. Miller.....	Camden.
T. B. Rogers.....	Westville.
H. W. Rowland.....	Jersey City.
D. E. Salmon.....	Washington, D. C.
W. P. Smith.....	Trenton.

These represent almost every part of the State, and will be added to or discontinued, as the amount of service needed may require. At present the general government under its own provisions has authorized an investigation of cattle in counties adjacent to New York City, in the general interests of the live stock of the country, but under the law there is no power of slaughter. The law, therefore, while it aids in investigation, gives us no aid in disposal. We shall, so far as appropriations will admit, continue by slaughter and inoculation to seek for the State riddance from contagious diseases, but for ultimate success must look to such legislation as will secure a closer inspection of all places where cattle are kept or slaughtered by those who by education and experience are competent for such service. We append hereto two circulars and such reports from the veterinarians as have been received or are deemed important for printed records.

INFECTIOUS PNEUMO-ENTERITIS.—SWINE PLAGUE.

CIRCULAR XLVIII. OF THE NEW JERSEY STATE BOARD OF HEALTH.

There is some difference of opinion as to the earliest appearance of this disease. Diseases of swine until recently were less fully classified than those of most other farm animals, and so under the names of "Anthraxoid Erysipelas," "The Distemper," "Hog Cholera," "Blue Sickness," Typhoid Fever, etc., ailments really different have been associated. At one time it was regarded as caused by a worm, the *Stephanurus dentatus*, (See Cobbold, Fleming, White, Fletcher,) which was not infrequently found, but is now known to have no causal relation.

Nusken in his general pathology on veterinary science, (Munster and Ham, 1829,) and Spinola in his treatise on "The diseases of the pig," (Berlin, 1842,) describe symptoms which many identify as the same disease.

Dr. G. Sutton, of Aurora, Indiana, described this disease in 1858 under the head of "Swine pestilence," in the *North American Medico-Chirurgical Review*. In the U. S. Agricultural Report of 1861, Dr. E. M. Snow, of Providence, Rhode Island, gives a detailed account of the disease, and states that it was recognized in this country in Indiana, in the summer of 1856.

Harms, (Hanover, 1869,) under the name of pig erysipelas and pig plague (pamphlet), is believed to describe this disease.

Dr. Budd, in a lecture to the members of the Royal Agricultural Society in 1865, and in his treatise on typhoid fever, speaks of it as the exact counterpart of typhoid fever in man, as does Professor Warty Axe, of London, in "The Veterinarian," July, 1865. They were both mistaken, as shown by Dr. Murchison and others. Roell (Wien, 1876,) follows nearly the views of Harms. If, as is probable, the disease is included in the one so often described as Anthracoid Erysipelas, according to Fleming (1875), it prevails as a "most fatal and destructive malady in Great Britain, on the Continent, and in America and Australia." In the U. S. Agricultural Report of 1878, Prof. James Law accurately defines the special symptoms and gives details of autopsies made by him in Scotland. He has also since made important culture and other experiments as to it. The medical officer of health of Great Britain, in an introductory note to the report of Dr. E. Klein, V.R.S. (1877), says of the swine plague and hog cholera that "the disease is rife in all parts of England and Ireland, and it produces oftentimes great ravages among herds."

Zundel (Paris, 1874), probably describes the same disease, as does Ballinger in Ziemassien's *Cyclopædia of Practical Medicine*, London, 1875, where he says of swine, "They are subjected to a scourge which is frequently, though falsely, reckoned as anthrax and is indeed similar to it in many features and equally dangerous, viz., the hog plague."

Dr. J. M. Partridge, in the second annual report of the Indiana State Board of Health (1884), says:

"Swine plague, or hog cholera, undoubtedly appeared in this country as early as 1860. It was not then regarded as a contagious disease, and received no general attention or public notice until fifteen years later, or about 1875. At this time its widespread proportions and fatally destructive character began to cause great consternation throughout the pork-producing regions of the northwest, as it was estimated that the loss to the producers from this disease amounted to the enormous sum of \$15,000,000 annually. In this emergency Congress appropriated \$10,000, to be placed in the hands of the Commissioner of Agriculture, for the purpose of investigating diseases of domesticated animals. The Commissioner, finding that the loss of swine was greater in numbers and value than that of all other animals combined, wisely determined to expend the greater part of this appropriation for investigations in this direction. He therefore appointed an examiner in each of the seven States where this disease was most prevalent. Their examinations and reports have done great credit to the authors, and rendered most valuable service to the country."

For one of the earliest and the most thorough inquiries into the disease, we are indebted to Dr. E. Klein, F.R.S., whose valuable research and reports

on its history, pathology, etc., are to be found in the Public Health Reports of the Medical Officer of England, for the years 1876 and 1877. These have been followed up by the valuable series of investigations by Detmers, Law, Salmon, and various others under the auspices of the U. S. Agricultural Department. See Reports of 1875, 1877, 1878, 1879, 1880, and 1881-1882. Prof. W. Osler, of Montreal, has closely studied the disease.

In the fall of 1878, H. J. Detmers, V.S., of Chicago, claimed to find a special form of bacteria, which he called "*bacillus suis*," which he believed to be the contagious particle. Dr. D. E. Salmon, of the Bureau of Animal Industry, Washington (Report of 1881-2), disputes the views both of Klein and Detmers as to the pathogenic agent or contagion being a bacillus, but views it as a micrococcus (page 269), found both in the glands, the blood and the tissues.

Because of the great mass of investigation and literature to be found on the subject, of which those referred to are but specimens, this Board, under the present provisions of our law, did not regard it as essential to do more as to pathological investigation of the disease, than to make enough post-mortem examinations to confirm its diagnosis. As there had been sporadic cases of it in the State before, it was carefully noticed in the first circular of this Board as to contagious diseases of animals, issued in 1879. (See 4th Report.)

It is not necessary here to enumerate all the various symptoms or pathological changes which are found in various cases, but only such as are the most constant and diagnostic. Only the condition of the lungs, the intestines, especially the large intestine, and the lymphatic glands, are constant as to post-mortem appearances. In addition, the changes in the skin, in serous membranes, in the heart, the liver, the spleen and the kidney, are worthy of note.

The disease is not transmissible to men, but is, although not readily, to some of the lower animals, as the rabbit, the mouse and the sheep.

The following is mostly Klein's description of a typical case:

In the severer cases we observe constitutional and other disturbances in the living animal after an incubation period of two to five or more days. The animals do not feed well, are dull, creep into their straw, probably from a sense of feeling cold. Their skin feels hot and the body temperature is raised. This last symptom shows, however, great irregularity and variation. In some of the severer forms we find the skin of the groins, neck, inside of the thigh and perineum swollen and of a patchy or diffused redness. This redness may be absent altogether, or it may be only transitory; it may appear for only a short period at the outset, or near the fatal termination of the disease. Hæmorrhages in the red patches are occasionally seen; they lead to the formation of scabs. The red patches of the skin, at all events, are a very inconstant symptom.

In many severe cases the animals suffer from diarrhœa. This may be persistent or only temporary, disappearing and coming on again. When it is of a permanent character, the animals become soon emaciated to a considerable extent.

The respiration is quick and impeded. There is often hoarseness and cough.

On post-mortem examination, we find that ulceration of the ileo-cæcal

valve, and especially of the colon, is very marked. In the latter we may find confluent ulcerations of great dimensions, occasionally several inches in diameter. As a rule, they are round or oblong. The Peyer's glands, near the ileo-caecal valve, are distinct. In the lower part of the colon we find the solitary lymph-follicles very marked, projecting more or less over the surface of the mucous membrane as nodular swellings. The mucous membrane of the large intestine and duodenum (in some cases also that of other parts of the small intestine) present numerous small hæmorrhages. The sub-mucous tissue of the large intestine, especially the colon, is the seat of hæmorrhages.

The lymphatic glands of the pelvis, the mesenteric glands and the glands in the portia hepatis are greatly enlarged and firm; in their interior may be seen fibrinous deposits; their peripheral parts are more or less filled with effused blood.

The spleen is occasionally enlarged, the capsule shows numerous small hæmorrhagic spots. In one case I have seen considerable number of white brittle nodular or irregularly-shaped masses in the substance and underneath the capsule of the enlarged spleen. The liver is occasionally enlarged, full of blood; in some cases it shows hæmorrhagic spots underneath the capsule.

The peritoneum is highly inflamed, containing numerous hæmorrhagic spots; there is considerable amount of clear or more or less blood-tinged and coagulable exudation in the serous cavity. Masses of solid lymph are found on the omentum, the mesentery and the serous covering of the large intestine, which in some cases show also numerous minute false membranes. The pleura and pericardium are in most cases more or less inflamed, their cavities containing inflammatory exudation.

The lung is the seat of more or less severe lobular pneumonia; considerable portions of both lungs become airless and more or less consolidated. The trachea and bronchi contain muco-purulent matter slightly tinged with blood.

The tongue, mucous membrane of mouth and epiglottis occasionally show hæmorrhagic patches or even ulcerations.

The disease is highly infectious. By direct experiment it can be proved that the diseased lung, the contents of trachea and bronchi, the diseased intestine—particles of ulcerated mucous membrane that are discharged with the fæces—the diseased spleen and the peritoneal exudation contain the *materies morbi*. The disease can be produced in a healthy animal by inoculating a minute quantity of the *materies morbi* into the skin or mucous membrane. The disease may be induced also by mixing the *materies morbi* with the food. I have not been able to determine, definitely, whether the fresh blood of diseased animals, when inoculated, does or does not, as a rule, induce the malady. The disease can be produced by simple cohabitation with a diseased animal, or by putting a healthy animal in a place where a diseased one had been previously kept.

The eruption is not always present, and yet most look upon it as an eruptive or exanthematous disease. In severe cases it is rarely absent. There is a "uniform or patchy redness on the under part of the abdomen and on the inside of the forelegs and thighs. The eruption is in the form of small round raised spots of a papular appearance, but the minute pimples sometimes fill with a thin fluid, and so become vascular and dry away into crusts." According to Prof. Axe the pimples are often successive to a third or fourth crop.

Klein made various culture experiments and cautiously claimed that the microphyte or "specific plant germ," found by him, differed from any other known. (See pages 169 and 217.)

A condensed and well-arranged description of the disease is to be found in "The Relation of Animal Diseases to Public Health." F. G. Billings, D.V.S., New York, 1884.

The disease, when caused by inoculation, developed in from three to five days, but its period of incubation, when caught, is not very accurately known, being given as from five to fifteen days. It is communicable by contact, through the air and by articles or persons that have been in contact with the pens, etc.

"The external symptoms are a dullness of the eyes, the lids of which are kept nearer closed than in health, with an accumulation of secretion in the corners. There is hanging of the head, with lopped ears, and an inclination to hide in the litter and to lie on the belly and keep quite. As the disease advances, the animal manifests more or less thirst, some cough, and a pink blush or rose-colored spots, and papular eruption appears on the skin, particularly on the belly, inside of the thighs and forelegs, and about the ears. There is accelerated respiration and circulation, increased action of the flanks in breathing, tucked-up abdomen, arched back, swelling of the vulva in the female as in heat; occasionally, also, of the sheath of the male, loss of appetite, and tenderness of the abdomen, sometimes persistent diarrhea, but generally obstinate constipation. In some cases large abraded spots are observed at the projecting points of the body, caused by separation and loss of the epidermis. In such cases a slight blow or friction on the skin is sufficient to produce such abrasions. In many cases the eruption, blush and spots are entirely absent; petechia are formed in only about one-third of the cases. In some cases there is considerable inflammation of and discharge from the eyes. Some animals emit a very offensive odor even before death. In large herds, where the disease prevails extensively, this offensive effluvia can be detected for a great distance to the windward. In nearly all cases there is a weakness or partial paralysis of the posterior extremities, and occasionally this paralysis is so complete in the first stages of the disease as to prevent walking or standing.

"As symptoms of special diagnostic value, which are scarcely ever absent in any case, the following are mentioned: Drooping of the ears and of the head, more or less coughing, dull look of the eyes, staring appearance of the coat of hair, partial or total want of appetite for food, vitiated appetite for excrements, rapid emaciation, great debility, weak and undecided and frequently staggering gait, great indifference to surroundings, tendency to lie down in a dark corner, and to hide the nose and even the whole head in the bedding, the specific offensive smell and the peculiar color of the excrements."

"If the animals are inclined to be costive, the *fæces* are generally grayish or brownish black in color and hard; if diarrhea is present, they are semi-fluid of a grayish-green color, and in some cases contain an admixture of blood."

The disease is not transmissible to man, although some are sickened by its odor. It is transmissible by inoculation and perhaps by contagion to some of the lower animals, as rabbits, mice and sheep, but not readily.

Pigs that are kept in a filthy way, that drink polluted water, or are kept in open fields exposed to changes of weather, contract the disease when it is prevalent more readily and severely than others. It seems especially active when the grass is wet, or when animals by reason of pasturage in stubble or for other reasons have sores or scratches about the snout or body. The infection is exceedingly persistent, and while cold weather and the slaughter of so many hogs in early winter diminishes the disease, the freezing of the virulent matter does not destroy its activity (Law). While no ill results followed experiments as to the use of the salted and well cooked meat of mild cases, as the amount of fever and the changes which have occurred in cases apparently not severe cannot be fully known, any animal at all sick should not be killed for food.

It thus appearing that the character of the disease, its symptoms, its lesions, and its contagiousness are well understood, the practical question is what is to be done to check the ravages, since it is now domiciled in over thirty States, and yearly causes the loss of animals whose value counts into the millions of dollars.

I. No reputable authority claims that much is to be done for the sick swine by way of treatment. The most of these die, and if they recover are so reduced or diseased as not to be worth fattening.

II. This however does not at all indicate that nothing is to be done by way of *preventing* the spread of the disease. The following are the chief directions when a case occurs. *Do not remove the sick pig, but remove all the rest.* If the herd is a large one divide it into two or three herds. Let new, temporary pens be made of entirely new boards, with new troughs, new pails, new swill, and to which, or about which no one shall go who has had to do with the old pen. This course carried out *accurately and rigidly* will save most of the hogs in most of the cases. If after removal new cases occur, at once transfer them to the old pen or kill them, and if there are more than one or two cases move the hogs again. After the first case occurs, give to each well hog, of one hundred pounds weight, three times each day a good half teaspoonful of flowers of sulphur dissolved in milk. For those of heavier weight increase the dose in proportion.

Some good authorities claim equally good or better results from the use of ten drops of carbolic acid (full strength), to each one hundred pounds of weight, and given three times per day in solution of a half pint or pint of water.

The only other remedy suggested by a sufficient number of good authorities, is some one of the combinations of sodium with sulphurous acid known as sulphite or bisulphite of soda.

Half dram doses three times per day in their usual food, may be given for each one hundred weight of flesh. We prefer the bisulphite in about teaspoonful doses.

You may choose either of these three named remedies and give them systematically, and see that the pig *really gets the* amount attempted to be given. The treatment should be followed up for at least two weeks.

The same treatment in double quantities for all these remedies is claimed

to be of service to sick hogs as well, but full proof cannot be found. In giving such medicines to swine, it is often best to scoop out a part of a cooked potato and then plug it with part of another, and so give it to the animal, as the potato is likely to be eaten, and thus the whole amount given reaches the stomach. The scattering of fine charcoal, of sulphur, of lime, or of plaster on the boards, or more cleanly parts of the pen near the trough may also be wise. It is not believed, however, that a pen in which a case has occurred ought to be occupied at all by the well hogs, or by any new herd, until all straw and manure have been entirely removed, all fences whitewashed, and all troughs, and pails, and swill barrels disinfected as directed in former circulars.

As the disease is no doubt often conveyed from the pens or herds of neighbors, or from running water which comes through the premises of those who have the disease, or even through the air from adjacent farms, too great care cannot be taken by any one whose herd has it, that it be not transmitted. Hogs turned out to pasture, especially before or after it is wet with dew or mild rains, seem to get it because the wafted material is more apt to alight and remain amid moisture. There are some remarkable examples of exemptions to herds whose owners have been skilled and consistent and exact in their precautions. Where a neighbor's herd is affected, in the opinion of most authorities, it is wise to put adjacent herds on some one of the treatments named, and to use precautions as to the field exposure, as to cleanliness, and even as to change to new pens, so as to anticipate attack.

When hogs die or are killed they should be promptly buried not less than *four feet* under ground, and where other hogs will not have access for two or more years.

No hogs should be allowed to run at large, and if owners are careless, Chap. LIV. Sec. 4, Laws of 1881, provides a remedy.

As the disease is so readily transmissible, swine sent by cars or any public conveyance may so infect these as to impart the disease to other animals.

If the disease continues to show the virulency and extent shown recently in this State, and so common in portions of other States, some special powers should be given township boards of health acting under the directions of this board and its veterinary assistants. Already the veterinarians whose directions have been closely followed, attest the value of the methods suggested. It is believed that known preventive measures faithfully carried out by owners can prevent or much restrain the spread of the disease.

While the disease now attacks herds that are well kept, we are learning from this and other animal diseases the direct result of ill treatment of our domestic animals.

Dr. Detmers has well said :

"The domesticated animal does not approximate the habits of his pioneer ancestor in point of cleanliness. It is the instinctive habit of the animal to bathe in water and wallow in mud to counteract heat and as a protection against flies ; but in a state of nature, when the mud has served its purpose, the animal cleanses himself by friction with the nearest tree ; the filthy

bed which the domestic animal becomes satisfied to occupy in a state of confinement is never occupied by animals running in the forest, and given opportunity to make and change their sleeping places at will—in short, when allowed to provide for his own existence, he exercises a more intelligent regard for his wants than is ordinarily exercised for him by his owner, who attempts to supersede instinct by reason.”

Cobbold, in his Treatise on Animal Parasites, says, that “swine are not attacked by a greater variety of entozoa than other domesticated animals.” The prevalence of these and of various microphytes or “disease organisms,” animal or vegetable, in animals, is usually the result of the artificial conditions established by man. We are to seek riddance from such destructive animal pests, not by finding specifics for disease which do not exist, but by finding our way back to natural methods of dealing with animals, and so preventing those immense losses to agricultural and stock-rearing industries, which are so rapidly increasing. Thorough and enforced cleanliness for all domestic animals is for the interests of their owners, because for the welfare of the animals. Impure water, spoiled foods, poor ventilation, filth or imperfect care generally, will tell upon man or upon beast, and, unfortunately, the innocent owner must suffer with the ignorant and the careless. This and every other epizootic or enzootic prevailing among animals should lead to a careful study of the indications as to food, habits, care, and all that contributes to their most perfect health.

Copies of this and other circulars of the Board to be had by sending postal to E. M. Hunt, M.D., Secretary, Trenton, N. J.

HUSK OR HOOSE AND TUBERCULOSIS IN CATTLE.

CIRCULAR XLIX. OF THE NEW JERSEY STATE BOARD OF HEALTH.

Among the various forms of parasites that infest the lower animals are those belonging to the nematoda (round worms.) Some of them are common to men and animals. Others are not, in any of their forms of life, transferable from the one to the other.

Cobbold says: The nematodes of the ruminants (cud-chewing animals) are both numerous in and destructive to their bearers, those infesting the lungs being productive of a parasitic bronchitis, termed husk or hoose. In cattle, the lung worm (*strongylus micruris*) is particularly fatal to calves, while *strongylus filaria* attacks sheep and especially lambs. A larger but less common lung strongyle (*S. rufescens*) is sometimes found associated with the latter. In 1875 I conducted experiments with the view of finding the intermediate hosts of *strongylus micruris*, and I arrived at the conclusion that the larvæ of this parasite are passively transferred to the digestive organs of earth-worms. The growth and metamorphoses which I witnessed

in strongyloid larvæ taken from earth-worms (into which I had previously introduced embryos) were remarkably rapid.

The *strongylus micruris* is quite similar to the *strongylus filaria*, the parasite found in the lungs of lamb and sheep. To the affection, as found both in lambs and in calves, the names husk or hoose, phthisis pulmonalis veriminalis, and parasitic bronchitis are given. It is better, however, since the worm itself is somewhat different, to give different names. Neither should be called phthisis pulmonalis veriminalis, since phthisis has come to be so exclusively applied to consumption or wasting due to tuberculous deposit. The name "parasitic bronchitis" is the best, if a general term applicable to all animals thus affected is used.

The bronchial cough of the calf makes the name husk or hoose quite distinctive for it. The parasite *strongylus micruris* gains access to the pulmonary tissue and bronchial tubes through the circulation, the ova being absorbed from the digestive canal. The seat of the irritation is indicated by a bronchial cough, "husk or hoose," loss of flesh, a varying degree of constitutional disturbance, and death by suffocation, if the sufferer is not relieved. If any mucous be coughed up and examined the parasites may be discovered. Bronchial irritation occurring in calves during summer or autumn should always be looked upon with suspicion, and its source thoroughly inquired into. The disease is rarely found in cows and oxen, although cases of it do occur in these. It is said to be most frequent where calves are exposed to dews, and pastured on wet pasture or low, ill-drained lands, or where, in dry summers and scarcity of water, they are supplied by stagnant pools which eventually become dry. It is most common in the late summer and fall. Most of the veterinarians of the Board have had occasion to distinguish between it and pleuro-pneumonia, as it is often confounded therewith.

The treatment recommended is as follows: "The calves are to be warmly housed if the nights be cold; the affected animals are, upon all occasions, to be removed from the healthy—not that the disease is contagious in itself, but that the parasites or their ova are apt to gain access in the bodies of the healthy—and for the same reason the healthy should be removed to fresh pasture and to dry situations, as the fields upon which the disease has prevailed will, for a time at least, be tainted by the parasites and ova." In treatment, chief reliance is placed on the inhalation of fumes, either of sulphur or chlorine, as both sulphurous acid and chlorine gas will kill the parasite. The mode of using these is the same as in the disinfection of dwellings, and the details can be given by any competent veterinarian.

Generally three or four inhalations of fifteen minutes each day will much limit the disease, and finally cause it to disappear. Salt, turpentine, lime-water, etc., have been found useful.

"The enclosures in which the animals have been temporarily housed should be thoroughly scoured with boiling hot water impregnated with salt." The free use of commercial sulphuric acid, one pint to eight gallons of water, sprinkled over the yard and thorough whitewashing, add to the security against the recurrence of the disease.

TUBERCULOSIS IN CATTLE.

The existence of tuberculosis in animals, and especially in cattle, has long been recognized. Several circumstances have of late led to a closer inquiry as to it. The disease has seemed to be largely on the increase. Villemin and others have established its communicability both by the exposure of animals thereto, and by the test of inoculation. Fleming has given facts in support of its probable spread by infection, and to show that the disease may, in exceptional circumstances, be conveyed from diseased to healthy animals.

Creighton and others claim to have shown that human and bovine tuberculosis are so nearly the same disease as to be interchangeable. Gerlach claimed from his feeding experiments that the flesh and milk of tuberculous animals must be excluded from human food, since by using it in its raw or half-cooked state, tuberculosis is liable to be reproduced in man. The hereditary tendency of the disorder seems to be established. The possible communicability of consumption in some cases has also given a new interest to bovine tuberculosis. These various views by competent and skilled observers, even if not yet accepted as conclusive, cannot but lead to the most earnest inquiry, since the health and welfare of man and of all other animals is directly involved.

In the report of the New Jersey State Board of Health, 1881, T. B. Rogers, D.V.S., thus refers to it:

"Tuberculosis is not uncommon. In one autopsy made last spring the tubercular deposits extended to almost every tissue of the body. The first noticeable trouble in this case was mammitis, the post mortem showing that the hardening of the mammae was due to tubercular deposit, and not to common or ordinary causes of trouble. Practitioners, in view of this, will do well to exclude tubercle before pronouncing this affection local and harmless. Whether the milk from a tuberculous animal is fit for human food, or her flesh fit for beef, is a question which should receive grave consideration from your Board. My own opinion on this subject is very decided, and I strongly advocate the slaughter and burial of these cases wherever found."

During the last summer a series of cases came under the examination of this Board. Cases having occurred in a valuable herd in this State, it became our duty to consider whether it was to be regarded as subject to the law relating to the contagious diseases of animals. At that time, with the advice of the veterinarians in attendance, it was decided that no prohibitory action was required, but that full inquiry as to the extent and character of the malady would be desirable. As a result, it must be stated that there is a growing conviction on the part of veterinary authorities that the disease is not infrequently communicated from animal to animal; that, in some cases, both the meat and the milk may become unfit for food, and that stables in which it has occurred may become so permeated with the infection as to give it to the animals not in direct contact with the diseased ones.

Within the last year one owner in New York State of a herd of Jerseys has been compelled, after other losses, to slaughter forty-five of his cattle. If the views of its communicability are accepted, it must be remembered that it is not claimed as a diffusive contagion, or that the meat is always unfit for use, or that the milk is harmful, unless the udder itself is diseased. The Board, however, thinks it proper to issue a circular which shall give some description of the disease, of its alleged causes, and a statement as to the precautions to be taken for its prevention, or as to herds in which it is found to exist.

"It is characterized by the deposition of tubercular matter in serous membranes, in the lungs and other organs, wasting of the tissues and other signs of imperfect or malnutrition, which lead more or less rapidly to a fatal termination; the tubercular matter undergoing various characteristic changes, according to the length of time it has been deposited, and modifying the symptoms accordingly." (Fleming.)

Prof. Walley speaks of the serous membranes, such as the pleura and the lining membrane of the abdomen, as showing tubercular lesions oftener than any other structure.

The most usual form seen with us can be thus described: "The tubercle at first is very small, about the size of a pin's head, then that of a pea and a hazelnut. In the course of time these become converted into small, hard globular nodules, of the color of connective tissue; gradually, however, they become gray and somewhat translucent in sections, and constitute the so-called gray or fibrous tubercle. These gray miliary nodules may remain discreted and scattered over the surface of the membrane like millet seeds; they may become connected together by delicate bands of new connective fibrous tissue, forming the so-called grapes of England, the angleberries of Scotland; or they may become aggregated together and form immense masses, which may degenerate in particles or en masse, or they may remain fibrous.

The "grape" or "angleberry" appearance is, perhaps, better described by the German name of *perlsucht* or pearl disease. This post-mortem appearance, so often seen, is very diagnostic.

Besides the serous membranes, tuberculosis of the lungs, tubercular infiltration of the lymphatic and mesenteric glands, tubercle in the liver and in the alimentary tract are not rare. Fortunately, tuberculosis of the mammary gland or udder is not so frequent as of other glands.

Where there is tubercular deposit in the digestive tract the *feces* are not infrequently tinged with blood. Ulcers are found here and there. Prior to irruption of the ulcer, in chronic cases, the mucous membrane is elevated by the tuberculous nodule, which is readily distinguished by its yellow color. These nodules are found in various parts of the intestinal tract.

Tuberculosis of the lungs, when occurring in animals, has not a few of the symptoms which characterize the same disease in man. In these cases, cough is a more prominent symptom, and the diagnosis from pleuropneumonia, especially in the chronic stages, is not always easy.

In whatever form tuberculosis attacks cattle, the animal does not thrive.

With some, the symptoms are loss of appetite, scouring and mucous or dysenteric discharges and other symptoms of imperfect digestion. With others, the cough and uneven respiration indicate the affection of the respiratory organs. Where the lymphatic or mesenteric glands are involved, the animal will not take on flesh and remains long in an unhealthy state. Where the mammary gland is attacked, the diseased part, when cut, is apt to have a reddish hue, and the secreted milk is liable to be contaminated with the tuberculous products. In most cases the milk deteriorates in quality, if it does not diminish in quantity.

When we come to examine into the causes of tuberculosis among cattle, they are found to be very similar to those detected as to man. That it is hereditary, the discovery of the disease in calves, and its tracing in the offspring of unhealthy cattle, abundantly proves.

High breeding, and especially in-and-in breeding, seems to favor the development of the disease. Animals ill-fed, or kept in large numbers in poorly aired apartments, are most likely to show the disease.

Cows which are abundant milkers, or which are forced in order to secure large returns, are most apt to fall victims to the malady. There is also much probability that an animal seriously affected with tuberculous disease will impart it to other susceptible animals near by. Cases enough are on record to show such transfers, and that a particular stable, or part of a stable, where cases have occurred, seems unhealthy for other animals until full disinfection has been practiced. It may not be so actively communicable as to deserve to be called contagious, as many claim that the cases in which it is communicated are exceptional. They are chiefly, if not entirely, those in which the lungs are so diseased as that the breath is full of infective particles; those in which the discharges from the bowels, as dropped upon the grass, come in contact with grazing animals, or those in which a diseased udder conveys the malady to calves.

Prof. Walley, of Edinburgh, is so pronounced in his views as to say that a tuberculous animal is "useless for breeding, dangerous for dairy purposes, valueless and dangerous as a companion, and its flesh noxious for human food," and so claims that our whole energy should be directed not to curing an animal, but to preventing the disease.

Prof. Williams, speaking of those cases in which the tubercular deposits have become masses, says that they are to be viewed as excrescences, and if they are carefully removed and the membranes and structures in which they are imbedded and from which they grow are carefully dissected from them, the flesh is perfectly good. Others insist that all such flesh shall only be used after thorough cooking. The question as to the use of the milk has been made to depend much upon the condition of the udder and upon the presence or absence of tuberculous deposit in it. This is often hard to determine until after death. It is also difficult to see how, in a cow greatly affected in the alimentary canal or in the lungs by a constitutional disease, such a secretion can remain pure. It is now believed by many physicians that the uncooked milk from tuberculous cows is a frequent cause of tuberculosis, and especially of mesenteric tuberculosis, in children.

For the prevention of tuberculous diseases in animals the following good rules are given :

"1. All flesh and offal of affected animals, especially in the advanced stages of the disease, should be destroyed.

"2. All suspected animals should be carefully isolated until pathogenic signs or tests have become developed.

"3. All actually affected animals should be slaughtered.

"4. All contaminated food, litter, &c., should be disinfected or burned.

"5. All infected houses should be disinfected.

"6. No animal whose history is tainted, even in the slightest degree, or in whose system there exists the least suspicion of tubercle, should be used for breeding purposes.

"7. Great care should be exercised at the period of birth to avoid any influences which will weaken the tissues in adulthood.

"8. Breeding animals should be carefully shielded—as far as is practicable—against debilitating influences of any kind.

"9. The system of feeding and general management of our high-class stocks should be regulated on a more rational and conservative basis than that on which it at present rests."

The treatment of an animal suspected of tuberculosis and yet not so affected as to be of no value should aim at fattening. If the muscular tissues are to all appearances healthy, as tubercle is never as a rule developed in such tissue, it is not to be rejected as food simply on the fact that masses are found in the abdominal cavity, or that the lungs or glands are diseased. There seems to be stronger evidence that the uncooked milk of animals suspected of tuberculosis should not be used. Yet if there is no tubercle in the udder, there are those who still claim that the milk is not to be condemned.

The fact that tuberculosis in cattle is admitted to be largely on the increase in Europe, in Great Britain, and in this country, and that it is an outcome of forced and unsanitary methods, and is especially prevalent among high-bred and pampered stock, should lead all stock raisers to a closer watchfulness over the laws of health which pertain to cattle, not less than to human kind. Pure air, pure water, cleanliness of skin, good bedding, proper food and exercise, and special attention to milch cows, is essential to the preservation of the health of herds.

Copies of these and other circulars are to be had on application by postal to the State Board of Health, Trenton, N. J.

REPORTS OF STATE VETERINARY INSPECTORS.

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REPORT OF T. B. ROGERS, D.V.S.

Herewith I send you a report of work done by me for the Board during the past year. "Hog cholera" has caused greater loss in the year 1884 than all other animal diseases grouped together. As nearly as I can ascertain, it was brought into the neighborhood of Hurffville, Gloucester county, by a drove of Western hogs, and it was spread thence over a large section of country, causing a loss of many thousands of dollars.

While we may comfort ourselves with the idea that swine plague is always propagated by contagion, and once got out of a district may be kept out, certain circumstances in the late epizootic in Southern New Jersey point to the supposition of its origination *de novo*, and you will pardon me if I allude to this at some length. It is easy for the veterinarian to account for the transmission of this plague to places far separated from each other, and apparently well isolated. Currents of air, dogs, vermin, birds, may convey the contagion, and it seems to me that the buzzard is often to blame in this matter, eating his fill of carrion on one farm and vomiting some of it on another.

It appears to me that the buzzard's day of usefulness has gone by, and the dangers he exposes the stock men to more than counter-balance his questionable usefulness as a scavenger. The dead should be burnt or buried. The buzzard is the lazy man's friend—he should go.

It is easy, I say, thus to explain the carrying of contagion for long distances; it is difficult to understand, on the same theory, how Mr. John Dawson, of Wolferts Station, lost all his hogs and his next neighbor, Mr. James Flanagan, whose hog pen was about three hundred yards from Dawson's, escaped entirely. Does the germ, causing the plague, acquire a pathogenetic virulence in one situation that in another is lacking? I saw a number of instances having the same bearing during the past summer. A number of post-mortem exami-

nations were made, some in your presence, and the lesions presented left no doubt but that the disease was true swine plague.

The preventive treatment recommended was the use of carbolic acid in the swill, with cleanliness of the surroundings and isolation of the sick. These measures were attended by a diminution of the mortality wherever they were strictly carried out.

I would recommend that your Board advise the farmers that the so-called hog cholera cures, advertised for sale, are but expedients for drawing money from their pockets; they are further damaging in a sanitary sense from the fact that they induce carelessness as to the sanitary condition of the swine.

Measures should be taken during the present legislative session to give the Board more control of this disorder. Texas fever has appeared in Gloucester county, a post-mortem made leaving no doubt as to the diagnosis. The cattle were isolated until danger was apparently over—*though one fell dead when being driven to the butcher*. Several deaths in a herd at Elmer led to an investigation showing the probability of Texas fever being the cause.

The increasing prevalence of pleuro-pneumonia in Delaware, Pennsylvania and New Jersey renders it probable that infected cattle will find their way into South Jersey. Farmers should be taught to isolate their new stock until the incubative period has passed. This plan is far better than ferry inspection, a method of more than doubtful value, as many cases will be passed at the ferries (in the incubative state), and the inspector's permit gives a false sense of security to the farmer and dealer.

The writer has during the past twelve months given considerable attention to milk in its relations to sanitary medicine and has accumulated evidence showing that there is no reasonable doubt about the communication of bovine tuberculosis to man through the means of milk, and cases in his own experience prove that its evil influence on nutrition is great, even when falling short of the development of tubercle.

The State should make provision for the destruction of tuberculous animals, and it would be well if practicing physicians would communicate to the State Board reports of autopsies where the serous membranes, especially the sharp edges of the lungs were the seat of deposits of "perlsucht." The writer cannot close this report without suggesting that it would be of inestimable value to the people of this

State if a chair of veterinary medicine could be established in Rutgers College, not to make veterinarians, but to teach the coming generation of agriculturists the value of sanitary medicine in its application to our domesticated animals.

REPORT OF C. K. DYER.

I submit the following report as Veterinary Inspector for the State Board of Health of New Jersey :

I was called March 28th, 1884, to the farm of Barton H. Thorn to see a cow supposed to have pleuro-pneumonia, but found it not to be the case.

Called April 19th, to W. S. Taylor's stock farm. Found several cows suffering with pulmonary tuberculosis. Called again May 29th ; one had died and we held post mortem.

Called July 26th, to John V. Ely's farm, at Hightstown, N. J. Found a steer suffering from contagious pleuro-pneumonia, which I slaughtered. Mr. Ely informed me he had lost four, and had purchased five head from New Brunswick, N. J., during December, 1883, and twelve head from Mr. Dubell, Columbus, N. J., May 10th, 1883. His herd numbered forty-five head. Called again July 31st, August 6th, 13th and 22d, but have had no further developments.

Called August 22d, to Hurffville, N. J., to see the diseased hogs in that vicinity. Found it to be pneumo-enteritis. Called again August 25th, with E. M. Hunt, M. D., and Dr. Rogers, V. S. Made post mortem of two cases ; found it raging to an alarming extent.

Called September 6th, to W. S. Taylor's, Burlington county, N. J. Found several more cases of pulmonary tuberculosis.

Called September 16th, to Pemberton, to see extent of pneumo-enteritis, found to be raging on twelve or fifteen farms.

Called October 6th, to the farm of Mrs. Pointsett, Cookstown, N. J. Found a cow suffering with contagious pleuro-pneumonia. I learned that about March 1st, 1884, she had purchased her of a Mr. Gilbert, Recklesstown, N. J., and about July 1st, she began to show signs of the disease ; her herd contained eight head. Called again on the 14th, also on the 18th and on the 30th, when I slaughtered the above named animal and held post mortem ; have had no further trouble.

Called October 17th, to Mr. Murphy's, Trenton, to examine horse as to glanders. Condemned, and ordered him killed and buried according to the law.

Called November 11th, to the farm of R. S. Reeve, Burlington county, to examine mare as to glanders. Visited it again November 20th and also on the 21st. Condemned the animal and ordered her disposed of according to the law.

Called November 12th, to the farm of Mr. Jacob Shuman, Burlington county, to see mule; pronounced it a case of farcy. Went again November 21st, condemned, and ordered her disposed according to the law.

Called November 30th, to H. C. Burrichter's stable, Camden, N. J., to see mare as to glanders. Condemned her, and ordered her disposed of according to the law.

REPORT OF J. W. HAWK, D.V.S.

I submit the following report of work done by me for the Board during the year 1884 :

January 31st. I visited, in company with Dr. Hunt, the herds belonging to Mr. Wymans and Mr. McCandless, at Elizabeth.

May 5th. I visited a herd belonging to Mr. James Mulligan, near Waverly, found three sick with contagious pleuro-pneumonia. I made other visits as required, and had killed the three sick ones.

May 7th. At Mr. T. McCandless', I appraised one chronic case and had it killed.

May 15th. Accompanied by Dr. Hunt, I visited Mr. J. Mulligan's herd.

May 16th. I went to see a cow owned by Mr. Michael Brady; found it suffering from contagious pleuro-pneumonia; had it slaughtered.

May 16th. I visited a herd belonging to Mr. Nathan Marsh, and examined it.

May 26th. Accompanied by Dr. Hunt, I visited a herd belonging to Mr. Joseph Marsh.

May 27th. I called to see a herd of cattle belonging to Mr. Wilson; I quarantined the herd and had two cows killed.

May 28th. I again visited Mr. Wilson's herd, this time in company with Dr. Hunt, and had four cows killed. I made several other visits.

June 25th. I examined a herd of cattle belonging to Mr. F. Blanke, at Linden.

September 1st. I visited, at Seacaucus, a herd of cattle belonging to Mr. Kincler, and found one cow suffering from contagious pleuropneumonia; I had her killed; I made other visits to the same stable.

September 2d. I had one cow slaughtered belonging to Mr. Chercoles.

September 9th. At Seacaucus I had one cow, suffering from contagious pleuro-pneumonia, slaughtered; she belonged to Mr. John Bruel.

September 9th. I visited a herd containing twenty-five head, belonging to Mr. Feinbig, at Seacaucus; had one cow slaughtered, and inoculated the herd.

September 10th. In company with Dr. Hunt, I visited Messrs. Kincler's and Feinbig's herds.

September 12th. I had another cow slaughtered at Mr. Kincler's, and inoculated the remainder of his herd.

September 18th. I visited Mr. Feinbig's herd and found two cows very sick.

The following is a report of the glanders existing at the South Orange horse car stable:

April 11th. Accompanied by Dr. Hunt, I visited the South Orange horse car stable, which was affected with glanders.

April 14th. I quarantined the South Orange horse car stable, and ordered killed one chronic case.

April 17th. Assisted by Dr. Gerth, I examined 154 horses and found two chronic cases.

April 22d. Accompanied by Dr. Hunt and Dr. Liantard, I visited the car stable and had one horse killed.

April 30th. Dr. Hunt and myself visited the car stable and had two horses killed, one suffering from glanders and one from farcy.

May 15th. Assisted by Dr. Miller, I examined the horses at the car stable—153 head.

June 24th. Dr. Miller and myself examined the horses at the car stable, and ordered two killed.

August 5th. Assisted by Dr. Miller, I again examined the horses.

August 25th. In company with Dr. Hunt, I visited the car stable.

September 18th. Assisted by Dr. Gerth, I examined all the horses at the South Orange horse car stable and found them all in good condition. They were then released from quarantine.

REPORT OF H. W. ROWLAND.

Having been asked to give a statement of the work done by me, I will therefore submit a brief outline of the same, for the year 1884, as follows:

January 3d. Visited a farm in Union county, near Linden, and found pleuro-pneumonia.

January 8th. Was out to place in Union county, where I found pleuro-pneumonia.

January 17th. I was out to two places near Elizabeth and released herds that had been placed under quarantine, on account of the existence of pleuro-pneumonia; I also was to another place not far distant, where pleuro-pneumonia existed.

January 23d. Visited farms in Union county, near Linden, where pleuro-pneumonia existed.

January 31st. Visited farms in Elizabeth and Linden where pleuro-pneumonia was.

February 9th. Visited a farm in Union county, near Elizabeth, and found a cow suffering greatly from pleuro-pneumonia; had her appraised and killed.

February 18th. Was out and examined a herd of cattle, as to the existence of pleuro-pneumonia, in Union county, near Elizabeth, and found herd affected.

March 1st. Visited two farms near Elizabeth, in Union county, and released herds from quarantine; also, visited another place where pleuro-pneumonia existed.

March 24th. Was sent for to visit a farm in Middlesex county, as to the existence of contagious pleuro-pneumonia; I examined a herd and found one that was suffering from the malady; this one was placed by herself; she was taken much worse and was killed.

May 7th. Visited a farm in Union county, in company with Dr. Hawk, where pleuro-pneumonia existed. At this place we found a cow that was sick and was getting no better, which we killed. On post mortem the lungs were in a most terrible condition.

July 2d. I had word to come to Ogdenburgh, New Jersey, as some parties thought that their herd of cattle might be affected with pleuro-pneumonia; I examined said herd, and found them to be suffering from other causes.

September 22d. Was sent for in Hudson county to look after a cow that was running at large, that looked as if she might be sick; I made investigations and found the cow after some difficulty, and then examined her and found her to be suffering from pleuro-pneumonia; I placed her then under quarantine, and reported her to the State Board of Health.

September 23d. I also made other investigations of places in and near the above place mentioned.

October 8th. Visited a place not far from Seacaucus, in Hudson county, and found three cows affected with pleuro-pneumonia, and placed them under quarantine.

October 9th. Was called upon to see as to some glandered horses; also, went to a place where I found a cow with pleuro-pneumonia.

October 11th. Revisited the other places where pleuro-pneumonia existed in Hudson county.

October 15th. Was out to North Bergen, as to a report I had heard as to the existence of pleuro-pneumonia; I was to several places and found none; at last I came to a place that it looked as though the disease might exist; I went in and I learned from the party that they had lost a cow about three weeks before; also, another only a few days before.

October 17th. Was out to West Hoboken, in Hudson county, and I found a cow out on the commons that was suffering from pleuro-pneumonia.

October 24th. Was out to Greenville investigating as to pleuro-pneumonia.

October 30th. Went out to look after pleuro-pneumonia in some cattle that are kept near rock, out from Jersey City.

REPORT OF WILLIAM B. E. MILLER, D.V.S.

In accordance with my duty as one of the Veterinary Inspectors to your Board, I have the honor to submit the following report of the work done by me from January 1st, 1884, to date:

March 19th and 20th. Visited Goshen, Cape May county, and examined the horses of Wm. D. Tomlin, for glanders. Found one animal suffering from the disease, which I condemned and instructed the owner to have destroyed. The premises were ordered to be quarantined and disinfected, and a close watch kept on the other animals until such time as I should visit them again. Another animal had died prior to the time of visitation.

April 20th. Visited Hopewell, Mercer county, and investigated the report of an outbreak of hog cholera or swine plague in that vicinity. Found that the disease had made its appearance among the swine of several herds. I subsequently wrote to Dr. Hurley, veterinary surgeon employed by the owners of the animals, and instructed him to keep a careful watch over the infected herds, and endeavor, if possible, to prevent any further spread of the disease. He cheerfully complied, and coincided with my views in the matter, and the serious results connected with the disease have thus been very much modified and prevented.

May 15th. I visited Newark, in company with Drs. Hawk and Gerth, and examined the horses in the Newark and Orange street car stables. The report of the examination has been submitted to you by Dr. Hawk.

May 29th. Visited Burlington, N. J., in company with yourself, Dr. Dyer and others, and examined the herd of Jersey cattle owned by Wm. S. Taylor, in which some disease had for a long time been lingering, and from which fatal results were frequently occurring. An examination of the animals convinced me that they were suffering from tuberculosis, and a post mortem examination, made in the presence of all the visitors and others, confirmed this opinion beyond any doubt.

June 24th. Revisited the Newark and Orange horse car stables, in company with Drs. Hawk and Gerth.

June 30th. Visited Turkey, Monmouth county, and examined the herd of cattle of Raymond Jones, on the farm of the late John Hall, which were reported to be dying from a disease that was thought to be pleuro-pneumonia. A history of the symptoms of those that had died, together with an examination of some convalescent cases, satisfied me that there had been no pleuro-pneumonia among the animals.

July 4th. Revisited Goshen, Cape May county, and re-examined the horses of Mr. Tomlin. As there were no symptoms of any dis-

case among the remaining animals, and the premises having been thoroughly disinfected, I removed the quarantine therefrom.

July 29th. Visited Hightstown, Mercer county, and, accompanied by Dr. A. C. Doyle, went to the farm of John V. Ely, and examined his cattle, among which there had been several cases of contagious pleuro-pneumonia. Found two animals which I regarded with suspicion but which were evidently convalescing. A full report of this herd was made to you by Dr. Dyer, who had visited them before this time.

August 4th. Visited Allentown, Monmouth county, and examined a cow owned by William C. Hutchinson, which I found to be suffering from contagious pleuro-pneumonia in its severest form. As there was danger of the spread of the disease from this animal to others kept a short distance from her, I at once decided it best to have her appraised and slaughtered, which was done, as reported to you at the time. The danger of any outbreak in consequence was thereby lessened, inasmuch as she was the only cow kept by Mr. Hutchinson, the others, referred to above, being owned by other parties.

August 5th. Re-examined the horses of the Newark and Orange Horse Car Company in company with Dr. Hauk.

August 6th. Revisited Hightstown in response to a telegram from J. Dallas Reeve, to join him there and go with him to J. V. Ely's place.

October 11th. Visited the farm of William Bettie, of Camden county, and examined the herd of cattle of Messrs. Bettie and Evans, in which were two very sick animals, but which had been isolated from the others in the herd. I found them suffering from all the aggravated symptoms of contagious pleuro-pneumonia and had them removed to a greater distance from the buildings and quarantined there, being well satisfied that they could live but a few days at most. Both died within a few days, as at the second visit made, on the 16th, the carcasses of both had been removed and buried.

October 13th. Revisited the farm of William S. Taylor, near Burlington, and re-examined his cattle. Found two or three new cases, developing tuberculosis, that were not suspected at the last visitation.

October 20th. Visited the farm of Hon. Edward Burrough and others, of Camden county, upon which swine plague was raging. Found the disease in its most fatal form on one or two farms. Gave the owners all the information I could in relation to the disease, and

enjoined upon them to provide the best sanitary conditions possible and the use of proper disinfectants.

October 27th. Visited Salem, Salem county, and in company with Dr. Cooper, examined the herds of cattle of Andrew C. Cook and others, in which it had been reported that pleuro-pneumonia existed. A thorough examination, together with three post-mortems, proved beyond any doubt that the disease was "*phthisis pulmonalis verminalis*" and not pleuro-pneumonia. A second visit was made to this locality a few days later, in company with Dr. D. E. Salmon, of the Agricultural Department at Washington, D. C. Mr. Cook lost, altogether, twenty-four animals from the disease.

November 1st. Revisited the herd of Bettle and Evans. Animals all well.

November 21st. Visited Mount Holly and accompanied Dr. Dyer to Columbus and Medford to examine two animals affected with glanders. Found both to be genuine cases of sub-acute glanders, thereby confirming Dr. Dyer's opinion, and ordered that they should be at once destroyed. A report of these cases was made through Dr. Dyer.

November 27th. Visited the stable of H. C. Bumchter, of Camden, and found a suspicious case of glanders contained therein. Gave the animal a purgative, and, in company with Dr. Dyer, visited it again on the 30th, and each of us decided it to be a genuine case and ordered its destruction, which was at once carried into effect.

December 2d. Revisited W. S. Taylor's herd. Killed and made a post-mortem of another cow, which presented all the prominent lesions peculiar to the disease.

December 31st. Revisited same herd again in company with Dr. Dyer.

January 1st. Visited the farm of Samuel N. Rhoades, of Mount Ephraim, Camden county, and examined his herd of cattle. Found two of them suffering from contagious pleuro-pneumonia, one of which was rapidly approaching a fatal termination, the other apparently convalescing. Quarantined the herd and isolated the sick animals. The disease was brought to the farm by the purchase of twenty cows from near Lancaster, Pennsylvania, about the 1st of November, one of which showed symptoms of the disease as soon as she arrived at the farm, and soon thereafter died. Not many days after, another sickened, which was the one I saw, and which died.

Three days later, as ascertained on the occasion of my second visitation, made on the 5th, her carcass had, at my request, been kept, and I made a post-mortem, at which all the peculiar lung lesions and characteristics of the disease were observed. The other animal, seen at first visitation, was still improving in appearance and condition, and was apparently in a fair way to recover from the attack and pass into a chronic condition.

On January 8th I again visited the farm at the request of Mr. Rhoades, who had now become alarmed at the condition of affairs, and who had discovered that one or two other animals had slackened in their milk and were not feeding very well, and occasionally coughed, as did the first. On this occasion I found two others with an elevated temperature, and having the other suspicious symptoms referred to above, and advised their isolation from the balance of the herd. On the 13th I again visited the herd, accompanied by Dr. Dyer. On this occasion we found another sick, with one or two others suspicious, and we recommended to Mr. Rhoades the process of inoculation, in order to protect himself from greater loss. He decided to have the animals inoculated, and accordingly on the 17th of January Dr. Dyer and myself performed the operation on all the healthy animals—thirty-eight in all, and at once separated those not inoculated. We visited them again on the 25th, and they were apparently all doing well.

January 29th. Revisited W. S. Taylor's herd in company with Dr. Dyer, and made a final examination of the same preparatory to shipping them to Kentucky. Granted him permits for twenty cows and eighteen calves, all of which were apparently in excellent health. There were also some other calves that were nursing healthy mothers that did not need certificates of soundness, as they were but a few weeks old and apparently in the best of health.

REPORT OF A. S. LEATHERMANN.

I send you the following report of pleuro-pneumonia cases: G. C. Garhart, White House, writes to me as follows: To his knowledge he lost eight cases, and they were all lost previous to inoculation and none since.

George A. Clum, near White House, reports the following: "I

lost twenty-five head from pleuro-pneumonia; two head after inoculation is my recollection, and twenty-two previous to inoculation." According to his statement, he states his herd numbered about sixty head.

John A. Suydam, near White House, writes as follows: "In October one year ago I lost a cow which I think had a disease. I lost five head, with the one we killed, that had the disease. Some, slightly affected, recovered. I think they were affected by inoculation. My dairy numbered forty head at that date."

You already know as to the disease in the Pidcock herd.

Dairies that have been so long affected, I believe to be more difficult in getting rid of this trouble or disease. Mr. Suydam states that he believes all the dairies are now free from disease in that neighborhood. I have no knowledge of any at present, and hope that the State Board of Health receives credit for their prompt measures and success.

I have recently had several cases of Texas fever, and it mostly proves fatal. They were cattle that came through Buffalo yards.

Hog cholera has abated to some extent.

REPORT OF J. GERTH, JR., D.V.S.

The undersigned respectfully submits a summary of veterinary services rendered from February 2d, 1884, to date, as a Veterinary Inspector for the State Board of Health. During this period I have assisted in examining the contagious pleuro-pneumonia cattle of Morse Bros., at Linden, the glandered horses at the Newark and South Orange Horse Railroad Company's stables, and personally examined and condemned two glandered horses belonging to Mr. Delano, of Orange, and superintended the disinfection and quarantine of said stable. I have also caused a glandered horse to be destroyed at Mr. J. Condon's stable, East Newark, Hudson county, which stable was also thoroughly disinfected and quarantined. The stables were quarantined for a period of three months each. The cattle of J. Wiesinger, at Singac, Passaic county, were quarantined on suspicion for a short period, and numerous other cattle in that county examined.

The relations between the owners of diseased animals and the inspectors have, in most cases, been exceedingly friendly.

In thoroughly eradicating glanders and farcy from the Newark and South Orange Horse Railroad Company's stables, the State Board of Health, assisted by the local authorities at Newark, has performed a duty which cannot be too highly appreciated by the public.

I am of the opinion that the present laws and their strict enforcement, reduced the existence of contagious animal disease to a minimum in Essex county. If contagious pleuro-pneumonia or glanders still exists to any extent in this county your agents are not aware of it, and owners are extraordinarily careful in hiding the fact. I have also been informed that owners of pleuro-pneumonia cattle and glandered horses resort to thorough disinfection, separation and destruction of the affected animal, upon being satisfied that they were diseased.

I should like to draw the attention of the Board of Health to the necessity of instituting a series of microscopical examinations for *trichina spiralis* in Jersey hogs, to compare with examinations of Western hogs. Correct statistics, in relation to this subject, will prove of great interest and benefit not only to stock raisers, but also to the public.

Another great necessity is the erection of public abattoirs in various counties of this State. Such institutions are self-maintaining and are of incalculable benefit in protecting the public health, by preventing the sale of diseased or otherwise unwholesome meat, and in tracing contagious animal diseases to their herd.

The chief service of Dr. Humphreys was in examination of dressed swine in Union county; that of Dr. Smith as to cases of glanders in Mercer county, and Dr. Lowe as to some reported cases in Passaic county.

GRASSES.

BY SIR J. B. LAWES, BART., LL.D., F.R.S.

GRASSES.

BY SIR J. B. LAWES, BART., LL.D., F.R.S.

Through the kindness of the Hon. George B. Loring, I have received a most interesting report of the agricultural grasses of the United States. The report is a work of great value, containing 126 well-executed plates of the various species, both wild and cultivated, and 136 analyses of grasses, the greater portion taken when the plants were in full bloom, though a considerable number have also been analyzed at different stages of their growth. There is also a series of analyses of grasses grown in garden soils, for comparison with the same grasses grown on poor soils, or taken from the wayside.

The work was commenced in 1878, and has been carried on up to the time of publication. I think I may venture to say that so extensive a series of analyses of grasses has never before been brought together in any country. There is, however, one point which has struck me very much; it is that while I recognize almost the whole of the grasses with which I am familiar—as having been grown upon my own, or other pastures in Great Britain—the larger portion of those mentioned in the report form no part of the pastures or waste land of our country.

With such an immense mass of analytical data before me it is exceedingly difficult—without overloading my paper with figures—to select the material so as to bring out the more practical results of the inquiry. An examination of the table of analyses of the 136 specimens, containing more than 1,000 separate ingredients, is somewhat disappointing. I use this word in the same sense in which I applied it to a series of analyses of our own pasture grasses on a very much smaller scale, published by us some years ago. It is a fact that the chemical composition of the grasses does not indicate their relative feeding properties in the manner which we might expect, as I will endeavor to illustrate by a few examples.

It is well known that starch, sugar and digestible cellulose—all of which are included in the term “nitrogen free extract”—are the chief non-nitrogenous foods in our crops. I exclude oil or fat, which have a still higher feeding value, as in the grasses they are much mixed with the waxy substances which are not foods; and as the quantity of the two combined does not amount to more than from 2 to 3 per cent., their exclusion is not of much importance. Of the nitrogenous substances, the albuminoids are of by far the most importance. I shall, therefore, confine my remarks to them, and to those substances which I have mentioned above as coming under the term of nitrogen free extract.

I will refer, first of all, to three grasses which, both in the States and in England, enjoy a high reputation as pasture grasses; and further, to two others which, at all events in our country, are considered to be very inferior, in quality. The three good grasses are orchard grass, timothy and blue grass. The two inferior ones are *agrostis vulgaris* and *festuca ovina* or sheep fescue. I do not know whether these two latter possess familiar names.

I have selected the two latter grasses from others equally bad, because upon my own pastures the tendency of the land is to grow them whenever it is at all impoverished, while the first three grasses are only capable of driving the inferior grasses away when they are plentifully supplied with food. In the following table will be found the composition of the three good and the two inferior grasses:

	Nitrogen Free Extract.	Albuminoids.
Phleum Pratense (Timothy).....	55.9	9.9
Phleum Pratense (Timothy).....	57.22	9.12
Dactylis Glomerata (Orchard Grass).....	50.	12.54
Dactylis Glomerata (Orchard Grass).....	55.	5.56
Poa Pratensis (Blue Grass).....	55.32	10.44
Poa Pratensis (Blue Grass).....	47.95	14.56
Mean.....	<u>54.45</u>	<u>10.55</u>
Agrostis Vulgaris.....	56.52	11.02
Agrostis Vulgaris.....	55.49	9.95
Agrostis Vulgaris.....	54.55	9.96
Agrostis Vulgaris.....	56.50	11.25
Festuca Ovina.....	55.20	9.9
Mean.....	<u>56.97</u>	<u>10.24</u>

Taking the means of six analyses of the good grasses, the nitrogen free extract amounts to 54.4 per cent., while in the two inferior grasses it is almost 57 per cent. or $2\frac{1}{2}$ per cent. higher. The albuminoids in the good grasses are slightly higher, being 10.85 as against 10.24 per cent. I will now take some of the United States grasses which have a reputation either for good or bad qualities. Texas millet is spoken of as a grass of the highest quality. Mr. Pryor Lea, who has cultivated it for many years, tells us, "It is far superior to any grass that I ever saw for hay." On the other hand, *Panicum Capillare* (old witch grass) has a very bad reputation. We are told "it is generally rejected by cattle, and is one of the most worthless kinds."

The following is the composition of the two grasses:

	Nitrogen Free Extract.	Albuminoids.
Texas Millet.....	54.93	5.48
<i>Panicum Capillare</i>	55.3	6.98

In both of the most important food ingredients, therefore, the worthless grass shows a superiority!

It is evident from these examples that a mere analysis of the grass will not enable us to determine its good or bad qualities. The analysis must be supplemented by a great amount of information, as both soil and climate have a most important bearing on the quality of the pasture, and these must therefore be taken into account before we can assign to the grass its real value.

There are countries in England which are celebrated for the fattening properties of their pastures, and in some cases individual fields in these countries have a reputation of their own. One of the most celebrated of the Leicestershire pastures was examined by me, when I found that each acre of grass would, without the aid of artificial food, fatten rather more than one large ox during the summer. To fatten an ox, we may assume that its live weight would increase about 500 pounds; and if the animal was fattened in a stall on mangles or swedes, with hay and corn, or cake, it would consume 6,000 pounds of dry food. The grass entering into the bullock's mouth each day would possess a feeding property not differing much from the mixture of corn, hay and roots. The herbage of the grass which I examined was extremely simple. It consisted almost entirely of white or Dutch clover and perennial rye grass. The herbage, as it is cropped by the oxen, is of a rich green color. It is very high in nitrogen and low in

woody fiber, but what distinguishes it most from pastures of inferior quality (my own at Rothamsted for example), is the even way in which it is fed. All the good is equally good, consequently the oxen eat all as it comes without making any selection.

I have stated that it would probably take 6,000 pounds of dry food to produce 500 pounds increase of live weight. Now, there is no difficulty in producing 6,000 pounds of hay per acre, and on some of our experimental plots we produce from 8,000 to 9,000 pounds every year. But it is one thing to produce a tall plant containing much woody matter, and quite another thing to produce fine herbage which grows up almost as fast as it is cropped down. This occurs when the soil not only furnishes water and each of the necessary foods of plants in exactly the same proportion, but, further, has the property of rapidly transforming the liquid excrement of the animals into plant food. This property of soils has not been investigated, but it is quite evident that on some soils the urine of animals produces a rank growth which is rejected by stock, while upon other soils the effect is exactly the contrary. It is far more easy to produce quantity by artificial means than it is to produce quality.

Some very important lessons are to be learned from the Leicestershire pastures. We find that a few plants, not in any way superior, if even as good as many others, are competent to produce a pasture of the highest possible quality, from the fact of their being suitable to the soil and climate, while in another soil and climate they may be of very inferior value. The Kentucky blue grass may be quite of secondary quality outside its own locality. In my own soil at Rothamsted, where a good deal of land has at different periods been laid down to grass, I have found that timothy, before many years have passed, is pushed out by orchard grass. In forming a pasture, a variety of seeds should be sown so as to give each a chance, but what the character of the herbage will be in the course of time no one can predict.

One thing, however, is quite certain, which is that, if the soil is poor and manures are not applied, weeds and bad grasses will prevail, while under a liberal treatment the good grasses will improve the bad ones off the face of the land. The survival of the fittest is the reward to be looked for by those who are liberal in the treatment of their pastures.

THE FARMER.

BY AMOS EBERT, CAMDEN COUNTY, N. J.

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As we seem to have an over-production of nearly all farm products, and instead of considering plans for increasing the productions of our farms we may, perhaps, very profitably take a little departure in the selection of subjects for consideration at this annual meeting of the State Board of Agriculture, and instead of considering the crops and the animals of the farm, let us take into consideration for a little while

THE FARMER,

and, first, the importance of a higher mental culture.

The idea has generally prevailed that any one could be a good farmer, and that in his line of business very little education was necessary. If he could read, write and multiply the number of his bushels of grain or potatoes per bushel, was all the education necessary to be a successful farmer, and that success in his profession depended mainly in the expenditure of muscular exertion.

One reason, and perhaps the only reason, why the farmer does not receive that recognition which those of other professions do, is because he is not as well educated.

But labor is only degrading as it is associated with ignorance. Many parents subject themselves to self-sacrifice and make heroic efforts to educate their sons and daughters to leave the farm; but if parents would make the same efforts to educate their children especially for the farm, then agricultural life would be pleasant and profitable, and those engaged in it would receive that respect to which they were entitled.

In a family of boys, where one has superior natural abilities, with an inclination for study, he is trained for one of the "learned profes-

sions;" another has strong inclination for drawing and painting, he is trained for an artist, and the one having less natural abilities receives very little education, for he is expected to remain on the farm.

If such a policy should be practiced to any great extent it would deprive the farming community of the best talent, and those who entered the professions would despise the occupation of their fathers. If such practices are continued we cannot expect the farmer to receive that recognition in the social scale which he should receive. If the policy of sending the best stock off the farm were practiced and leaving the poorest at home for reproduction, how long would a farmer receive the first prizes for his Plymouth Rock, or his Jersey Red or Chester White, or his Southdown, or his Alderneys?

It is now generally conceded that the farmer requires a higher education than he has received in the past, and the utility of the study of the natural sciences for the tiller of the soil is beginning to be recognized. No art or profession presents more points of contact with the various branches of the natural sciences than agriculture, and yet in no other pursuit is a scientific education considered of less importance.

The connection of the science of geology with agriculture is so apparent to every one who knows but the rudiments of it, that it needs only to be introduced to be studied and appreciated. It teaches the origin and nature of all the various soils and rocks, and all the great physical changes which are taking place from natural causes on the earth and beneath the surface.

The study of botany is well nigh indispensable to the agriculturist and the horticulturist; as it teaches the characters, habits and localities of many thousands of different species of plants; also, of their physiology, and explains many of the most wonderful processes of vegetation.

Meteorology investigates all the facts and phenomena pertaining to weather, climate, seasons, temperature, storms, rainfalls, latitude, altitude, winds, &c.

Zoology treats of the habits, localities, depredations and uses of all the members of the animal kingdom.

Natural philosophy treats of the properties and dynamic forces of light, air, water, and the mechanical powers and their application to machinery and other purposes of life.

Besides these many other branches are almost indispensable to the

education of the accomplished agriculturist. The study of astronomy, geography, architecture, political economy, algebra, geometry, &c., and in fact we might say a complete collegiate course belongs as much to the farmer as to the professional man.

The study of entomology—the history of the habits, transformation, and physical structure of insects, is a subject of great importance to the intelligent agriculturist, if he desires success and eminence in the pursuit of his calling. It is not only necessary that we should know which are destructive insects, and the seasons and manners, and the means they employ in effecting their work, in order that we may circumvent them, but we should also acquaint ourselves with those that from their parasitic habits are our friends.

The study of ornithology is also of much importance to the farmer, so that we may know the birds which destroy our insect enemies from those that destroy our crops.

But of all the sciences, no one is of more importance to the farmer than that of chemistry. It is the key which unlocks the great laboratory of nature, and shows us how she performs her complicated processes, and produces her wonderful phenomena. A knowledge of chemistry is more particularly necessary to the farmer on account of the many different kinds of chemical fertilizers now in the market, and now so largely used, so that he may have a knowledge of the valuable ingredients they contain, and use them intelligently.

It is thus seen that there is no occupation where an extensive knowledge is more necessary than in a proper and intelligent cultivation of the soil, and that there is no occupation so intimately blended with all the branches of the natural sciences.

Every farm should be made a chemical laboratory, and every farmer a practical chemist and a student of the natural sciences; then farming would not only be profitable but honorable. The farmer then, being an educated man, would magnify his profession, and would have that dignified confidence and polish which he has just as much right to possess as those of any other profession.

If science is only what Sir Humphrey Davy says it is—"refined common sense"—it should not be considered as formidable as it generally is, and the presentation of the subject should not discourage and alarm. The importance of a higher culture of the farmer was admitted by Congress in the establishment of agricultural colleges.

AGRICULTURAL COLLEGES.

Congress, by an act entitled "An act donating public lands to the several States and Territories which may provide colleges for the benefit of agriculture and the mechanic arts," approved July 2d, 1862, granted to each State, for such purposes, an amount of public land equal to thirty thousand acres for each Senator and Representative in Congress, to which the States were respectively entitled by the apportionment under the census of 1860.

The Legislature of New Jersey has granted the 210,000 acres, to which she was entitled, to Rutgers Scientific School connected with Rutgers College, the proceeds of this land scrip to be devoted to the uses specified in the act of Congress. In consideration for this land scrip Rutgers College has made provision for forty students, to be received on nomination by the respective counties of the State, to an excellent course of study of four years, free of tuition fees. This is at the rate of admitting and graduating ten annually.

It will thus be seen that, perhaps, not one in a thousand can ever be admitted to Rutgers College. Where, then, shall the nine hundred and ninety and nine be educated? Those who have no opportunities of schools or colleges need not necessarily despair, the obstacles in the way are not insuperable. The Chautauqua Literary and Scientific Circle, under the superintendence of J. H. Vincent, D.D., of Plainfield, N. J., offers excellent opportunities for home study. This new organization aims "to promote habits of reading, and study nature, art, science, and insecular and sacred literature, in connection with the routine of daily life (especially among those whose educational advantages have been limited), so as to secure to them the college student's general outlook upon the world and life, and to develop the habits of close, connected, persistent thinking."

Several of our presidents were not college graduates; and it is even said that one of them learned the alphabet from his wife. Numerous special investigations of the origin and history of persons who distinguished themselves have been made, and it is a noticeable fact that very many of them are not college graduates and from the farms. However interesting this subject may be, the time for enumeration is entirely too short, as the list is a very long one. I know that the officers have been very liberal in the allotment of time to me, for which I am under obligations to them, and I wish I could occupy it

more profitably. Suffice it to say that very many of those who distinguished themselves in oratory, poetry, science, art and statesmanship were not college graduates.

The want of time and means are often made an excuse for not engaging in self-improvement; but the long winter evenings could not be devoted to a better purpose. And did you ever think that one six-cent cigar a week would supply a one-cent daily paper for the same length of time? One five-cent cigar a day would pay for several papers and magazines a whole year; and many will expend a hundred dollars a year for tobacco, which, expended for books and newspapers and magazines, would furnish as much reading matter as a family could read, and in a few years would furnish quite a respectable library. What a school fund the \$600,000,000 would make, which is now annually expended for tobacco!

Another subject of the highest importance to the farmer, not yet alluded to, is

HYGIENE.

The superstitious notions of disease are fast passing away; some have traced the origin of them to the transgression of Adam, and not a few have ascribed them to satanic influence. The opinion that we are created subject to physical law, and that the observance of these laws is conducive to health and long life, and that the violation of these laws leads to disease and death, is not now considered as heterodoxical as it once was.

As "sin is the transgression of the law," so disease is the penalty of violated physical law. The statistics compiled by the National Board of Health show that the more important cities of the world rank as follows in comparative healthfulness. The death-rate, the number of deaths to each 1,000 persons of their population:

Chicago.....	17.9	Brooklyn.....	25.8
Philadelphia.....	18.3	New Orleans.....	27.7
St. Louis.....	18.8	Lyons.....	27.7
Boston.....	20	Berlin.....	29.3
Baltimore.....	20.9	Dublin.....	32.9
London.....	21	Liverpool.....	34.4
Vienna.....	21.8	St. Petersburg.....	35.6
Glasgow.....	21.9	Rio de Janeiro.....	40
New York.....	23.4	Pernambuco.....	50
Paris.....	24		

It will be perceived from this table that the death-rate of the different cities of the world is controlled by climatic and sanitary conditions.

Some years ago a town in Pennsylvania was visited by a very fatal disease, and many of its inhabitants died; the people became panic-stricken, and many fled from their homes; a day of humiliation and prayer was appointed, and many other means were considered to stay the terrible disease; it was afterwards discovered that the part of the river from which they obtained their water-supply became stagnant on account of the low water in the river, and some carcasses of dead animals and other impurities were found; everything was corrected and the disease was stayed.

The yellow fever broke out in Memphis; a thorough cleansing took place, and a new system of drainage was introduced, and Memphis became a healthier city than it ever was before.

Port Jervis, only a few years ago, had one of those sweeping visitations of typhoid fever which some people still regard accidental, but which should more properly be called criminal carelessness. Seventy-five cases of this terrible disease were persons who used contaminated milk from a farm where well and cesspool were allowed to be side by side. And quite recently one hundred and four cases of typhoid fever were traced to a single cow which drank contaminated water, in Ayrshire.

It has been noticed that the cholera would sometimes break out among the many thousands of pilgrims to the holy well at Mecca, to be purified by drinking the water or pouring it over their persons, and the cause of the outbreak has recently been ascertained. This well is quite near to the "Caaba," or Square House, the chief Mohammedan sanctuary, to which many thousands of Mohammedans make their pilgrimage annually. The British consul-general at Jeddah has recently sent a bottle of the water to the Royal College of Chemistry at South Kensington, to be analyzed, and Dr. Frankland, in his report of the analysis, says: "The water is of the most abominable character. In fact, it is sewage more than seven times as concentrated as London sewage; it contains no less than 579 grains of solid matter per gallon." Knowing the composition of this water and the mode of propagation of Asiatic cholera, it is not to be wondered at that outbreaks of this disease should often occur among pilgrims to Mecca, while it would scarcely be possible to provide a more effective means for the distribution of cholera germs throughout Mohammedan countries and then to other parts of the world.

It is useless to consume more time in showing the relation of disease and the violation of sanitary laws. One of the first things a student discovers in the investigation of the material world as related to the human race, is law, and a penalty upon its violation. It is well known that the death-rate is greatly influenced by preventable causes. The vital statistics of farming regions are not so easily obtained, but from reports from many responsible physicians in different sections of the country, prove that sanitary measures are just as important in rural districts as in towns and cities. One physician reports that at least one-third of the autumnal sickness in his region might be prevented by systematic drainage of farm lands, with a great advantage of agricultural productiveness. Another reports that at least 50 per cent. of the sickness in his region might be avoided by suitable sanitary precaution. All agree that a large proportion of the maladies coming under their notice are attributable to poisonous emanations of decomposing animal and vegetable matter.

The pure country air may be made impure and unfit for breathing purposes by noxious gases emanating from stables, pig-pens and out-houses, just as well as the air may be made impure by the effluvia from filthy alleys, cesspools and choked-up sewers in cities. The wash-water and sewage left to saturate the ground near the kitchen door during the winter, the coming summer sun will ripen into germs of disease as surely as it will ripen our grain crops in the field. Stagnant water, rotten wood, or decaying vegetable matter have caused many diseases and deaths which were ascribed to a "mysterious providence."

Important as the preservation of our health is, yet it does not appear to be of sufficient importance to be taught in our schools. Neither can we find much to encourage us in the higher institutions of learning. The young ladies who, in a great measure, will have the health of the future families in charge, learn the "accomplishments," how to make themselves attractive, and when their "education is finished," how many will know that when they cook an egg at a higher degree of heat than 165° F. will make the albumen, the most nutritious part of the egg, indigestible? They learn French and piano music, but how many will know that a joint of beef may be cooked so that it would be cruelty to animals if it were fed to a dog, if nothing else were fed with it?

"Observer," a correspondent of Popular Science Monthly, said

recently : " Here we have the great University of Michigan, the pride of the State, with its fourteen hundred students and schools of literature, science and the arts, dentistry, law, pharmacy, music, medicine and political science, and one can graduate and take the coveted degree of A.B., A.M. and Ph.D. and be an educated fool, so far as having acquired any knowledge of the structure and composition of his own body, or the laws of health.

The only thing that approaches the subject under consideration in Rutgers College, of our own State, already referred to, is Galton's physiology, and some lectures on that subject.

In examining the courses of studies in other colleges and universities, we find long lists of studies, too long to enumerate, but little or nothing of sanitary science. In Cornell University, with upwards of sixty professors and teachers, and many hundred lectures, they have only six lectures " upon the personal care of health," and much of these is occupied in showing " how to check bleeding, and how to practice the best methods for resuscitating the drowned."

Even in our medical colleges this subject does not receive that attention which its importance demands. In fact the prevention of disease is not considered part of the physician's duties. His profession is called the " healing art." Did you ever see a translation of a doctor's diploma ; you know they are always given in Latin. It would consume too much time to give one in full, but the following is part of one from the Jefferson Medical College, that part which relates to the physician's duties : " Therefore be it known, that we, President and Professors of Jefferson Medical College, in the Commonwealth of Pennsylvania, have created and constituted Doctor in the Art of Healing" [Name]. * * * * " To the one thus referred to — we have, by virtue of this diploma, most freely and fully granted and confirmed all the rights, honors and privileges belonging to the degree of Doctor in the Art of Medicine."

The uncertainty of relief from our medical practitioners when sick, should be a great motive for the prevention of disease. It is not very assuring to the sick when they reflect that we have different schools of medical systems, entirely at variance with each other, but all claiming to be founded upon scientific principles and experience. And it would be more interesting than instructive to take a retrospective view and compare the practice of medicine in its various departments, as we find it at the present day, and what it was in former years. Not

only have great changes taken place every generation or every decade, but year after year produces a new advocate for a new theory of disease, each condemning its predecessor, and alike to be condemned by its successor.

Another subject among a number of others to which I would like to refer, is the relation of the patent medicines to the public health. The avaricious charlatans engaged in that line of business take advantage of the unfortunate, ignorant and superstitious sick, and by glowing advertisements make them believe that they have discovered the true elixir of life, and that, by the expenditure of a few dollars, the sick could be restored again to good health and usefulness. Colossal fortunes have been made in this line of business. One of the most palatial residences on Fifth avenue, New York, was built with money made by selling pills. An eight-story granite warehouse on Chestnut street, Philadelphia, was built for the transaction of the patent medicine business with money made in that line of business; so was the marble palace for the owner's private residence, further out on the same street. The amount of business done in this line is enormous, and more than half of the drug stores in the country would close their business if it were not for the profits made on the patent medicines they sell. Some of these nostrums contain powerful poisons, such as arsenic, corrosive sublimate, opium, &c., and an immense amount of harm is done by their indiscriminate use.

It has now become to be very generally recognized by the best therapists that different persons, and even different conditions of the same person, are very differently susceptible to the action of medicines, and that within certain limits quantities must be adjusted to each individual case. There is a tendency among the most advanced and most intelligent physicians to abandon the most active medicines, except where the indications are most unmistakable, which can only be determined by expert examination. It is the opinion of many close observers that many cases of dyspepsia and nervous disorders are caused by the use of these nostrums. Many of those bitters and tonics contain alcohol and have caused many drunkards; those anodynes and soothing syrups contain opium, and have lulled many a child into brain fever and other brain diseases.

There is a law now in force in this State compelling all manufacturers of fertilizers to mark on the packages of their manufactures the ingredients they contain, and the passage of that law has saved

the farmers of the State many thousand dollars. The Legislature of this State, now in session in this building, could not do the people of the State a greater service than pass a law compelling all manufacturers of patent medicines to mark on their nostrums the ingredients they contain. While thus marking fertilizers has been a saving of dollars and cents to the farmers, but marking patent medicines in the same way would be a saving of the lives and health of the people. I believe such a law is now in force in England with great beneficial results.

I cannot do better than quote part of an address of the late Prof. S. D. Gross, of Philadelphia, delivered to a State Medical Society. In his old age, after many years of successful practice, he says: "The great question of the day is *preventive medicine*—the hygiene of our persons, our dwellings, our streets—in a word, our surroundings, whatever and wherever they may be, whether in city, town, hamlet or country, and the establishment of efficient town and State Boards of Health, through whose agency we shall be the better able to prevent the origin and fatal effects of what are known as the zymotic diseases, which carry so much woe and sorrow into our families, and often sweep like a hurricane over the earth, destroying millions of human lives in an incredibly short time. The day has arrived when the people must be aroused to a deeper sense of the people's welfare, and suitable measures be adopted for the protection as well as the better development of their physical and intellectual powers. This is the great problem of the day; the question which you, as the representatives of the rising generation of physicians, should urge, in season and out of season, upon the attention of your fellow-citizens; the question which, above and beyond all others, should engage your most serious thoughts and elicit your most earnest co-operation."

This is not only the opinion of Prof. Gross, but, also, of all the most intelligent physicians as well as the most intelligent non-professionals. But to put this idea into practice we must have some knowledge of the principles involved, which is now generally called sanitary science. But where is such knowledge to be obtained?

We cannot expect the physician to go about administering "preventive medicine," for by such means he would decrease his practice, and you know they make their living by doctoring the sick. The doctors should be the most competent to impart information on this subject, but as we cannot expect them under existing circumstances to perform such work, where then can we obtain such information?

Several works have lately been issued from the press, and a few journals are now regularly published, from which we can gain much valuable information in this line; and the amount of money needed to procure these publications could not possibly be invested for a better purpose.

If it is conceded that a knowledge of the laws of our being, and the laws of society—civil, sanitary and social—are of the utmost importance, then it must also be admitted that instructions on these subjects should be as systematically and thoroughly given as on subjects of less importance. If it should be determined upon to introduce this subject into our schools, it would be necessary to modify, to some extent at least, our scheme of education. It is evident that a subject which should have for its aim to contribute directly to the maintenance of health, the prolongation of life and the development of physical manhood and womanhood, should not be smatteringly taught, but by the most able teachers, of the ripest experience. It is difficult to find many competent teachers to teach this subject properly. As before stated, all sanitary subjects have been almost entirely neglected in our educational establishments; some of the plainest principles of sanitary science are constantly violated in some of our schools and colleges; we very rarely see them amply provided for sufficient ventilation, and the air in them offensive to the olfactories and more so to the lungs. In the construction of the most costly buildings in the United States for educational purposes very little if any provision for ventilation is made, and the air in their crowded rooms is often stifling. Teachers must first be taught. This subject should receive that attention in the normal schools, so that the future teachers may be thoroughly prepared for such work. School superintendents and boards of trustees should see that this subject receives proper attention in their respective school districts; not only by occasional lectures, but by able and faithful teachers, as systematically taught as any other branch of study.

It is more healthful in the rural districts than in towns and cities, but it is not nearly as much so as it should and could be made; but it cannot be expected that in this short dissertation much information can be given for the prevention of disease; all I can expect to accomplish is to cause an interest in the importance of the subject under consideration, and cause an incentive to practical self-examination of the subject.

Sanitary science, as we understand it now, is of very modern date. No scientific cause for disease could be assigned, and then theologians stepped to the front and said that disease and death in the world were caused by the disobedience of Adam and Eve in Eden. Preaching that doctrine will have very little influence in the prevention of disease at the present day. Robust and vigorous health can only be obtained and maintained by the physiological and sanitary laws to which we are subject, and if we violate these laws we will surely receive the penalties attached to their violation, whether we do it knowingly or ignorantly. It is as true now as when Hosea said, "My people are destroyed for the lack of knowledge."

Where disease prevails at the present time it is an evidence that there was disobedience not very far in the past. I have higher conceptions of the character of God than to believe that He delights in the torture of His children with pain, and in the "destruction of the innocents," because a man and a woman partook of forbidden fruit six thousand years ago, for we are told that God "does not afflict willingly, nor grieve the children of men." He bids us call Him our Father and wishes us to do His will in taking care our bodies, which He has so "fearfully and wonderfully made."

MARKET GARDENING.

BY THEODORE F. BAKER, OF CUMBERLAND COUNTY, N. J.

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MR. PRESIDENT AND GENTLEMEN—In attempting to treat the subject of market gardening allotted me by your Executive Committee, I will try to give you my own experiences and observations as they have occurred and revealed themselves during my labors in that occupation. As the small acts of man go to make up his character, so the small things in gardening lay at the foundation of success.

Many people unacquainted with market gardening accept the term as the next thing to perpetual drudgery, with no time for recreation, other than pulling weeds; yet, on the other hand, I would say gardening is to-day one of the best and most profitable rural pursuits, if done properly; at the same time healthful and a happy pastime. The proper man, with a determination and willingness to work, can safely engage in the business, and with judicious management can in a few years have a comfortable income from his labors.

The treasures are concealed in the soil about us; every clod and sod must be turned, the mind must be directed with a purpose; and to accomplish that purpose, *remember* that what you take from the soil in crops you must give back an equivalent. Upon this practice devolves success or failure. Market gardening tends to develop the man, makes him more thoughtful, quickens his mental perceptions, necessitating skillful management, and, to excel, constant study and persistent effort.

In the planning of our gardens, to select the best soil for raising certain products requires keen perceptibilities of the wants and requirements of each class of plants and vegetables. When so much depends upon soil, heat, cold, rains and drought, the wisest oftentimes fail.

In the selection of our fertilizing elements, a knowledge of the ash

ingredients of the plants aids in the selection from the animal and vegetable manures; also the several forms of mineral matter we have to stimulate growth.

In the selection of our crops a knowledge of the wants of our market is indispensable, that we may cater to the demand.

The varieties and quality of seed for planting should have careful selection. No one understands better the necessity of this importance than an old gardener, and I think I can say without fear of contradiction that poor seed are dear at a gift. I am sorry to say the markets are too full of spurious and worthless seeds. Imported seed will not, as a rule, produce satisfactory crops, yet on account of their cheapness are accepted by many, which is virtually saving at the spigot and losing at the bung-hole. The cry for cheap seeds has introduced another feature to the business, by which contracts are given out by seed houses to farmers unacquainted with their growth, who, through their ignorance of the influences of one variety over another, through pollenization, innocently fill their contracts with seed of doubtful character. These seeds are offered and sold without any guarantee as to their quality, character or purity to name. Every purchaser accepts them with this understanding printed upon the packages; therefore it is of vital importance that you should exercise *unusual precautions*, and purchase only from the most reliable dealers, of whom there are many. To be progressive, we should add new improved varieties to our collection.

In the preparation of the soil, it matters but little whether the land be good or poor; whether the fertilizers be plenty or none. If the cultivator fails here, all his other efforts are useless. In your anxiety to get early crops, make haste slowly.

In the planting of our seeds, we need to have a thorough understanding of the conditions necessary for the healthy germination of the different varieties we plant, the time required for the different seeds to vegetate under the varying temperature of spring-time, what degree of cold is required to kill the embryo in the soil with certain conditions of moisture existing, will be found valuable aid in determining what to do, and affording the knowledge that immediate replanting is necessary, which will be a saving of valuable time.

The seed-bed should be in perfect condition, which means fresh worked, mellowed deep, all manures thoroughly incorporated with the soil, harrowed and planked until all clods are reduced fine. The

soil should be firmed by a planker and not packed as with a roller, and should present a level, smooth surface when completed.

In sowing the seed, much more depends upon the knowledge of the proper depth to plant than is generally admitted. There can be no rule laid down to follow, as the different seeds require different depths, some only to be pressed into the soil without covering. Various soils require different depths, as to their predominating character—clay or sand—and again, the season of the year, or rather the prevailing temperature they may have to contend with, and the amount of moisture in the soil has everything to do with the depth you should plant. Long experience is required to adopt a minimum through which you may contend successfully with the varying changes of our climate for the most rapid germination.

That the temperature at which a seed germinates influences the seedling, has been apparent to all in producing what is termed among gardeners long-legged plants, where the temperature has been too high; or weak, puny, undeveloped ones where the temperature has been too low. Therefore I have adopted the plan of planting shallow in spring that I may have the benefit of the sun to increase the temperature; and deeper as the season advances, to avoid too high a temperature and secure the proper moisture. Schurbert, in his observations on the roots of agricultural plants, says: "The vigorous development of plants depends far less upon the size and weight of the seed than upon the depth to which it is covered with earth."

All seed, so far as possible, should be sown by drills, of which we have several patents. The advantages are regularity in depth, even distribution and saving of seed. They can be set to sow any quantity and cover from one-eighth to two and a half inches in depth, seeds of all sizes, and distribute a continuous row, or from eight inches to two feet apart in the row, as you choose to set it. It covers the seed, rolls after sowing, marks out the next row, under one operation, and for me performs the work of fifty men with the old style hand or pepper-box distributing; one man has sown two acres of ground per day for me with the drill, where the rows were but fourteen inches apart. With proper care in starting, and an observation during the progress of sowing, you can keep your rows straight, thereby adding much to the beauty of the plot and aids in the after-cultivation.

In the setting of plants, a knowledge of how, where and when is indispensable; whether deep, as with cabbage and cauliflower, or

shallow, with lettuce and celery; in a hill, on the level, or in a furrow. When, must be at whatever time the conditions of the weather and soil indicates a proper temperature for immediate growth. Plants will form new rootlets and start in twenty-four hours under proper conditions; on the other hand, may stand for a week, a fit subject for the prey of insects. Therefore the proper time is virtually success or failure, high or low prices for your crop. I have had instances where plants set one day, with favorable conditions of soil and atmosphere, have matured a crop ten days in advance of the same plants set the day following, with unfavorable conditions—wet soil, west, north or northeast winds prevailing.

Cultivation should begin as soon as the young seedlings are well up, or, in the case of plants set, you may begin at once, as the soil is more or less trodden through the operation of setting; the looser the soil is made, the warmer it becomes, thereby adding to the earliness. After each and every rain, as soon as sufficiently dry, stir your soil, and you will never be troubled with weeds, but simply to cultivate your crops. Promptness in this direction is often the difference between failure and success.

Weeds are at war with crops the moment they show themselves; and, as they are fighting upon their own grounds, soon conquer and defeat the vegetables we introduce to the soil. In these days of labor-saving implements for the cultivation of our gardens, there is no excuse for gardeners to grow crops of weeds unless it be through their supreme neglect and laziness. Instead of the hand-hoe we have steel rakes, and the wheel-hoes of various makes, with which one man can do the same labor of five men the old way, and more satisfactorily, especially in the hands of green or careless men. The danger of injury to the roots is reduced by their use. Our cultivators and plows do more damage to our crops than good, if not used with discretion. I have seen intelligent men plowing deep furrows alongside their corn when tasseling, satisfied they were doing thorough work, that would secure an abundant harvest. Let such a man dig up one plant before plowing and one afterward, and see what thorough work he has done in robbing the plant of its life-sustaining resources. I have in my mind's eye a field of corn which was treated to this thorough cultivation by plowing the past season, and in riding along the road you could see to a row where the plow had been used—the butchery committed—by the blades rolling up tight.

Perhaps I might say our limited knowledge of the structure of the

plants we have to deal with is a probable excuse for the manipulations we cause through improper cultivation. Root structure and root action being entirely beyond the limited knowledge of the average cultivator, he plows and hoes indiscriminately all crops alike, and at the time best suited to his convenience, irrespective to the varying stages of growth and root extension.

The medium in which roots grow has been described by Nobbe, and his experiments have established the fact beyond doubt "that where fertilizers were placed, whether in horizontal or vertical layers, at one inch in depth, at the center or bottom of glass cylinders, at that point a mat of the finest fibers were found." With this understanding of the natural adaptations of roots to material which could furnish them with food, we should apply our manures at such depths and places as we would wish the development of these fibers or feeding roots, that we may cultivate deep and sufficiently to retain moisture without injuring them; at the same time supply sufficient quantities of available food to induce the roots to form and remain as near the plant as possible. In this we see the necessity of rich soil for close planting.

The farther the roots have to penetrate the soil the fewer they number, and while a plant may flourish with a great extent of roots, another may equally as well with but short roots; by their being more numerous, the aggregate absorbing surface would be nearly the same in both. Therefore, the quantity of root is influenced by the richness of our soils. The more abundant the food, the better they are nourished, and the growth of the plant stimulated accordingly. Those which find no food remain undeveloped or perish, and through this lack of root we suffer more or less by the drought we encounter. With a rich soil properly prepared, with intelligent cultivation and sufficient root development, we can contend with drought for a long time without serious loss, and secure our crops for the market, in the advent of which comes the test of our abilities for the proper arrangement of our products that they may be attractive and irresistible to the purchasing public, in order to successfully compete in a crowded market. If, in the preparation for market, a vegetable requires washing, wash it, not puddle it; all dead or yellow leaves should be removed and care taken to have each bunch to compare one with another. The arrangement should be such as to show the vegetables to the best advantage. Radishes, beets, onions and celery and vegetables of that class sell only on the appearance they make. If clean, neatly arranged in the bunch, firmly tied and in a fresh condition, mark them sold.

If dirty, rolled up and drawn together, dingy with muddy water, bruised through careless handling, means left every time.

We see such conditions in our markets every day, and yet growers fail to profit by it.

There is also a reputation to establish for honesty. Honest packing is the key-note to permanent success. The man who wishes to establish a trade, and at the same time make money, will have every basket, barrel or package as good at the bottom and in the middle as at the top. When you adopt this plan of packing, you will secure a permanent purchasing trade of which no competitor can rob you.

Market gardening means vegetables all the year round. Therefore, another and perhaps most important necessity in marketing is to have a succession of crops and to grow all the leading vegetables, that you may hold your place in the market, and keep your products constantly before the people. An intermission of but a few weeks is always detrimental to your interests, and during which time you will find inroads made among your trade by your more enterprising neighbor, who is ever on the alert for the favorable opportunity.

Promptness in your engagements and a faithful fulfillment of the same is obligatory, therefore should be done with alacrity.

Respect others' judgment and criticisms on your vegetables with pleasant words and cheerful courtesies. In speaking of your competitors have but little to say, lest your words multiply through transmission. A still tongue makes a wise head, and remember the good will is preferable to the ill will, even of a dog.

As an illustration of the amount of produce and profit in gardening (trusting you will not consider me egotistical), I have selected two acres of my own garden which has been cropped for eleven successive years by alternating crops each year.

It is only justice to the business and the soil that I should refer to the proceeds and say it is the smallest return I have ever received. The drought commenced early in the spring and continued the entire season 1884, and was altogether the severest I have ever experienced. The total rainfall from May 1st to October 30th, being only 9.79 inches, a period of six months of growing season.

The soil is a sandy loam, with reddish clay subsoil, and lays nearly level. Was plowed eight inches deep October, 1883, and fifty loads of barnyard manure applied after plowing, broadcast per acre. In March, 1884, it was plowed again, turning under the manure, and a

lifting subsoil plow following in each furrow, mellowing six inches deeper, in all about fourteen inches deep. There was then applied one ton home-made fertilizer per acre, and mixed with the soil by an Acme harrow, set to run five inches deep, going over the plat four times. The scratch harrow and planker were then used to bring the soil smooth and free from all clods. March 24th, 7,000 cabbage were set, and one-half ton fertilizer applied in the rows.

March 25th, lettuce was set among the cabbage in the same rows, and the same day sixty-four square rods were drilled to radishes, rows fourteen inches apart, adjoining the cabbage. March 26th, set thirty-two rods to horse-radish six inches below the surface, the ground then leveled again, and on the 27th sowed with spinach, broadcast and harrowed in. Applied as a top dressing ten cart-loads of compost and firmed the soil with a planker. March 28th, drilled beets on ridges two feet nine inches apart, and sowed spinach between the rows broadcast, and harrowed in. July 11th, white wax beans were drilled between the beet rows, where the spinach had grown. July 25th, lettuce was set where radishes had grown, for fall use.

The first week in July the cabbages were all off, and the ground immediately plowed for celery. Cultivation by Acme harrow kept up until July 20th, when deep furrows were opened, five feet apart, by using Darnell's furrower, opening a furrow two feet wide and six inches deep. The hoe-harrow, closed, was then run in the furrow until the soil became fine and mellow and filling the furrow to within about three inches of the level; in this slight furrow, celery was set, July 28th, without any manure.

April 12th, one hundred and fifty pounds of nitrate of soda was applied to the cabbage on the row, and fifty pounds to the radish plat. April 20th, seventy-five pounds of soda was applied to the beets and spinach. July 31st, one hundred pounds of kainit and twenty-five pounds of nitrate of soda was applied to the string beans.

In summing up we find we have used—

100 loads of manure, at \$2 per load.....	\$200 00
2½ tons of fertilizer, at \$25 per ton.....	62 50
300 pounds nitrate of soda.....	9 00
10 cart loads of compost, at 75 cents.....	7 50
100 pounds kainit, at one-half cent per pound.....	50
Cost of seed.....	27 00
Interest on land, 2 acres.....	16 20
	<hr/>
	\$322 70

Making a total of \$322.70, exclusive of labor, for the two acres, cost or debtor.

To the credit we have—

119 baskets of spinach.....	\$39 15
8,718 bunches radishes.....	312 66
2,000 heads lettuce.....	60 00
372 baskets of cabbage.....	260 95
2,229 bunches beets.....	\$146 89
21 baskets at 25 cents.....	5 25
125 bushels cow feed, at 10 cents.....	12 50
	<hr/>
1,000 pounds horse-radish.....	70 00
Beans.....	20 00
1,000 heads lettuce in fall.....	30 00
100 heads celery, at 3 cents.....	3 00
1,586 bundles celery, at 20 cents.....	317 20
	<hr/>
Gives us a total credit of.....	\$1,277 60
Deducting the cost or debtor.....	322 70
	<hr/>
Leaves us with.....	\$954 90

Which represents labor and profit. All the vegetables were whole-saled in a home market, and there was no freight nor commission to be deducted. The crops most affected by the drought, and returning the least percentage of profit, were the ones which should have returned the greatest. Early cabbage and celery both failed to return but half a crop, while the labor was increased; especially so with the celery, as it required three stools to give the same weight which one should, thereby necessitating three times the amount of labor in handling for a given amount of receipts. The profit in all crops is realized from the excess over the medium, the labor being nearly the same in both instances.

There has been a constant inquiry during the past few years by farmers in New Jersey about the methods and profit in gardening, and many are annually starting in the business but to be disappointed. Do not let the success of others induce you to leave your business which you understand to engage in one you know nothing about; and I have no hesitancy in saying that a man who has spent years of his life on the farm in the production of the cereals would be as useless at the head of a market garden as he would be in the cab of a locomotive.

Another class are those who desire to engage in the business through

a man as foreman. To all such I would say: "The man who would through gardening thrive, must either hold the plow himself or drive." Men who by their knowledge and ability could fill such positions soon find land of their own to work, leaving you at sea without so much as a straw to cling to.

Competition is increasing each year, through Southern gardeners, who have the superior advantages of climate, enabling them to place upon our markets vegetables of all varieties long before we can. Through the same agency, the railroads and steamers, our business is as much cut and interfered with by the South as is the grain farmer's by the great competition of the West with their cheap transportation rates.

Southern products have caused no little alarm among gardeners who depend upon New York and Philadelphia for their markets, but as yet I see no need of great uneasiness. Their crops are, as a rule, about ended when ours commence, and though the keen appetites of consumers have been appeased they are willing to pay a price for the fresh and every way superior products of home growth that will enable us to continue to grow them profitably even for those markets. And without those markets we have hundreds of cities and towns, whose inhabitants number from 3,000 to 10,000, where market gardening will pay, and it is these cities and towns that should be catered to. We have towns bordering the greater cities, through which, every day, load after load of vegetables pass as through a wilderness, unmindful that these thousands of souls are fed by the same provisions they are loaded with. The grocer and retailer of these towns are obliged to make a trip to the city market, pay the commission men a profit, cart or pay drayage charges on the return trip. These extra expenses must be added to the products as cost, thereby bringing the article beyond the reach of many of the workmen of the factories, who are the greatest consumers of such products, consequently lessens the demand and consumption.

There are to-day hundreds of families, and even among farmers, who are ignorant of and have never tasted many of the tempting, healthful and invigorating vegetables of the garden, all of which have their functions to perform in nature, to keep the system of man in a healthy condition. The Germans, as a class, are as healthy as any people on the globe, and none enjoy and are better acquainted with the many vegetables and greens of the garden than they.

My advice to all wishing to engage in the business would be to select, first, your market, a small city or town, then your garden plat. Begin in a small way, with what varieties that are in demand, plant but little of such as are not known, yet, enough to introduce if at a loss. In a very short time you will find a demand which you cannot supply. As your knowledge of the business increases, and the demand keeping pace, you can extend your operations to the whole farm. You will find yourself in the midst of a business, built up by your own hands, that will absorb your whole attention and make life pleasant to enjoy.

Commence where you may, you will soon have followers, and it should be your ambition and aim to keep them as followers. Through your mental activity and persistent effort, with diligent application of the knowledge you have gained through study, will keep you at the head of your profession.

NEW JERSEY AT NEW ORLEANS.

BY GEN. C. H. BARNEY, COMMISSIONER FOR NEW JERSEY.

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It has been suggested to me that you would be glad to hear a little about the great World's Exposition at New Orleans, and particularly about the part taken by New Jersey therein. Of course, you are all familiar, through the numerous articles which have appeared in the newspapers, with the general scope and objects of the enterprise; you have all read how every State and Territory of this country (save the territory of Utah) is represented in the Government and States' buildings, and how the foreign nations have responded promptly to the invitation of the President of the United States; and many of them, notably Mexico, Germany, Russia, France, Italy, China and Japan, have sent of their choicest productions to do honor to this great International Exposition. A month might be spent, with pleasure and profit, in examining the various exhibits there displayed, and the catalogue would even then not be exhausted.

But we will assume that the average Jerseyman, or, indeed, the average visitor from any of the Middle or Eastern States, will not find it convenient or practicable to absent himself from home and business for a longer period than ten days, and you will naturally wish to know what can be done and seen in that period of time, and the best way to do and see it. The trip each way will consume three nights and two days, or three days and two nights, according as the start is made in the evening or in the morning. But, as with most of us, daylight is more valuable than darkness, we will suppose that we do as much of our traveling as possible at night. This will give us two days to go, two days to return, and six days in New Orleans. The first question to decide is, which route is the best to take? For a ten days' trip, we must travel by rail; a sea voyage is out of the question, as it takes six days to go and five to return, the Gulf Stream

shortening the return trip one day. We will find seven or eight different routes presenting themselves for our patronage; and as the rates of fare are alike on all of them, the decision will be simply a matter of taste or convenience.

For a Jerseyman, the most convenient, of course, will be one of the routes starting out over the Pennsylvania Railroad, and of these there are several to choose from. There is the Atlantic Coast Line, via Richmond, Charleston and Savannah; the Shenandoah Valley route, via Philadelphia, Harrisburg, Hagerstown, Roanoke and Chattanooga; the Kenesaw route, via Washington, Lynchburg, Montgomery and Mobile; the Piedmont Air Line, via Washington and Atlanta, or the route via Harrisburg, Pittsburg and Cincinnati. The time on all is substantially the same; and, as I said before, the decision simply rests upon which portion of the country you would prefer to pass through. I leave you to decide that point for yourselves, simply suggesting that the local agent of the Pennsylvania Railroad nearest to your home will be glad to furnish you with full information and a ticket. The price of an excursion ticket is \$45 from Jersey City, good during the Exposition, and allowing fifteen days, if desired, for the trip each way. The parlor and sleeping accommodations are \$10, and meals about \$4 each way.

Our own party went by the Shenandoah Valley route, and suppose, in imagination, we do the same this evening. Leaving Jersey City at 8 P. M., we awoke to breakfast the next morning at Hagerstown, Md. All that day we traveled through the beautiful and historic Shenandoah valley, between ranges of mountains on either side, passing over the battle-fields of Antietam, Front Royal, and others of more or less note, stopping for dinner at Luray, within a short distance of its noted caves, and supping at Roanoke, the former home of the once famous John Randolph. Next morning we breakfast at Cleveland, Tenn., and find that our watches are just one hour too fast, as we have entered the Central time belt, regulated by the time of the ninetyeth meridian. Between 9 and 10 o'clock we pass through Chattanooga, the battle-fields of Mission Ridge, and skirt the base of Look-out Mountain, where Hooker fought the famous battle above the clouds, and during the rest of the day run through the agricultural portion of the State of Alabama, and fully realize now that we are in a strange land. About the middle of the afternoon we pass Birmingham, that wonderful evidence of what may be done in the South in

the way of manufactures. Here is a city, six years old, of 20,000 inhabitants, with its ten iron furnaces, turning out 750 tons of pig iron per day, as busy and thriving a town as can be found anywhere north of the old Mason and Dixon's line. One firm in Birmingham has a five years' contract to deliver 100 tons of pig iron per day, at \$12.50 per ton loaded on the cars there.

We have our dinner at Attella, our supper at Eutaw, and having retired early, we awake before dawn next morning, and are dressed in time to enjoy the novelty of a ride over the twenty-six miles of trestle-work on which our railroad crosses Lake Ponchartrain, to reach the city of New Orleans. A wonderful and novel experience to be out at sea in a Pullman railroad car.

If we are on time, we will arrive at our destination at 6 A. M., and unless we have arranged for quarters beforehand, we will take a stage or horse car to the Hotel Royal, and get our breakfast. The first step is to secure comfortable quarters. These can be found at the new and elegantly furnished Hotel Royal at from \$2 to \$10 per day for rooms on the European plan, or at the St. Charles Hotel, at \$4 per day, on the American plan. Then there are cheaper hotels, the Hotel Vanderbank, Hotel Baronne, and others on the European plan, or the City Hotel, \$2.50 or \$3 per day, and others on the American plan. If economically inclined we may go to the Bureau of Information, 164 Grasier street, take a selected list of a dozen private houses which furnish rooms either with or without board, and probably get well suited at \$1 per day for room alone or \$2 for room and board. For visitors, like ourselves, I recommend that we engage rooms alone, and take our meals whenever and wherever we happen to feel hungry, which we shall have no trouble in doing at reasonable prices, for New Orleans is a city of restaurants.

Of course, as soon as quarters are secured, we shall want to start for the Exposition. We may go by several lines of horse cars, fare five cents, or by the boats on the river, fifteen cents for the excursion. The distance is three and a half miles; time of horse cars, thirty-five to forty-five minutes, varying on different routes. By water, owing to the bend in the river, the distance is about six miles, and time about forty minutes, but then you will have quite a little walk at each end of the route. A steam railroad is now nearly completed, which is expected to make the run in about fifteen minutes from Canal street, the center of the city.

The Exposition grounds and buildings have been so fully described and illustrated that it is useless to take the time to speak of them in detail on this occasion. There are two hundred and fifty acres of grounds; fifty-seven acres of buildings, in all, comprising the Main Building, thirty-three acres; the Government and States Building, ten acres; Horticultural Hall, Machinery Annex, Saw Mill Building, Live Stock Buildings, Art Gallery, Mexican Building, Furniture Pavilion, besides smaller buildings too numerous to mention.

In the Main Building are most of the miscellaneous individual exhibits. By individual exhibits, I mean those which are put in as an advertisement, or for competition, the expense of exhibiting and attending which is paid entirely by the individual, firm or corporation making the display.

Collective exhibits, on the other hand, are those presented by Governments or States, of their natural resources and industries, on the manufactured articles contained in which the manufacturer may indeed place his advertising card, but the whole expense of exhibit, and the whole credit of the same, devolves upon the State in whose name it appears. These collective exhibits show very fully the natural resources of the different States and Territories.

In the Main Building you will find New Jersey well represented. There are the silk men from Paterson, eight of them, weaving handkerchiefs and souvenirs, and selling them as fast as made; there are the potters of Trenton, half a dozen of them, with elegant displays; there is the Singer Sewing Machine Company, from Elizabeth; the very large and magnificent exhibit of the Clark Thread Company, from Newark; locomotives from Paterson, and hundreds of smaller exhibits of every name and nature from all parts of the State. At night the "Wizard of Menlo Park" illuminates the building with his beautiful incandescent electric lamps.

All over the building the eye meets the signs of firms or corporations from New Jersey. But every Jerseyman, and especially every agriculturist, will principally desire to visit the New Jersey State exhibits in the Government and State Buildings. Leaving the Main Building, we may either walk there, or ride upon an electric railway, the inventor of which, Mr. Leo Daft, is a resident of New Jersey. On the way we pass a cottage on the shore of the lake, the exhibit of the United States Life Saving Service. If we had time to stop we should find it manned with a crew of Jerseymen, who give exhibitions of their drill twice a day.

Reaching the Government Building, we shall find the United States occupying the center with an exhibit which cost \$300,000 to install, notwithstanding the greater portion of the exhibits were already on hand in the various departments at Washington, the Patent Office and the Smithsonian Institute. This display covers about four acres, and around it are grouped the collective displays of the several States and Territories; as I said before, all but the Territory of Utah being represented.

On the south side of the building, between the States of New York and Pennsylvania, and dwarfing both of them by its greater extent and completeness, stands the exhibit of the State of New Jersey, occupying about 10,000 square feet.

Of course, time will not permit me to give more than a general sketch of the different departments of the State exhibit, but I will give a brief, general description, which may be of interest:

The front of our exhibit is separated from the main aisle by an ornamental railing of scroll-work, painted white and ornamented with blue and gold, which is the case with all our railing, pavilions, cornices, etc. Passing this railing, will be found sixteen cases containing the collection of the State Geological Survey, over 1,000 specimens prepared by Prof. George H. Cook, and arranged in this exhibit by Mr. Fred. A. Canfield, of Dover. In each of the corners of our plot is an arrangement of terra cotta ware from several factories at Perth Amboy. The specimens of minerals and ores are greater in variety than those of any State in the building, and are supplemented by several valuable maps. We have also large specimens of iron and zinc ores piled on the floor, the zinc weighing 3,300 pounds.

Samples of the building stones of the State are next shown, with their faces differently dressed.

An octagon pavilion, fourteen feet in diameter, contains a life-size wax figure of a New Jersey National Guardsman, fully equipped, and doing duty as sentinel over the "Yorktown Vase," which stands on a pedestal at his side. Around him are grouped various military and historical relics, including muskets captured at the battle of Trenton, and a statistical account of our National Guard.

Continuing, will next be found the native woods of the State, cut to show the grain both ways, and highly polished. Over one hundred specimens are exhibited.

On opposite sides of the main aisle are arranged the agricultural

and horticultural displays. The former, arranged by Mr. Edward Burrough, of Merchantville, and William S. Taylor, of Burlington, consists of 307 separate contributions, showing corn in stalk and on the ear, grain in sheaves and in 208 glass jars, sorghum, flax, tobacco, nuts and a large show-case filled with the grasses of the State.

There are two contributions of barley, four of buckwheat, twelve of beans, ninety-eight of corn, eight of meal or flour, three of flax, two of grasses, eight of sorghum, twenty-nine of nuts, thirteen of oats, eight of rye and seven sheaves of grain. Also sixty-two contributions of seeds, three of tobacco and thirty-nine of wheat.

The display of fruits and vegetables, collected by Messrs. William R. Ward, of Newark, and David Baird, of Manalapan, is very creditable indeed. There are shown 340 varieties of apples, pears and quinces, fifty varieties of potatoes, ten varieties of cranberries, (the only display in the Exposition, so far as I have observed,) besides turnips, beets, parsnips, cabbage, onions, pumpkins from 100 pounds downwards, and, in fact, all the vegetables and fruits of this State. This display was arranged by Mr. Ward in person.

A large pyramid of native New Jersey wines stands between the agricultural and horticultural exhibits.

The principal features of the New Jersey agricultural and horticultural exhibits as, compared with that from other States, are their completeness and variety. Everything grown in this State is shown, but with no attempts to impress the visitor by the quantity of each article displayed. In place of great piles of corn all of one variety, we show half a dozen ears of each of a great many varieties, and we show our grains in glass jars of a quart or so each, instead of piling them up in sacks in a pyramid, perhaps twenty feet high. In other words, New Jersey's exhibit is not to be measured by car loads, but by the quality and variety of her contributions.

The State Agricultural Experiment Station makes an interesting show of some 200 kinds of artificial fertilizers made in New Jersey, with an analysis of each. It also contributes valuable maps.

The various manufacturing industries of the State are next grouped in a collection of over 100 exhibits, ranging from a lamp-wick trimmer to a piano. Some manufacturers display large collections, notably the potters of Trenton and the glassblowers of South Jersey.

On the gallery front over our space is an immense sign sixty feet long and eight feet wide, presenting the "Leading Industries of New

Jersey" in a statistical table, prepared by Hon. James Bishop, Chief of the Bureau of Statistics of Labor and Industries. This sign shows, in letters so large that "he who runs may read," the number of establishments, capital, number of hands, wages paid, annual product, &c., in some twenty-five of our principal industries.

Other special features of our display are a collection of photographs of the sea-side resorts of our State, another of photographs of farm-houses and buildings, and a bound collection of all the newspapers of the State of a specified date.

Under the gallery is the State headquarters or reception-room, comprising 1,300 square feet, with two ante-rooms, and the commissioner's office opening from it. The reception-room is separated from the exhibit space proper by a handsome rail, posts, cornice, and curtains which may be drawn or not at pleasure. The walls and ceiling are handsomely papered by Messrs. Janeway & Carpenter of New Brunswick, and present an appearance superior to the corresponding space of any other State.

The reception-room is furnished with a piano, organ, chairs, tables and writing conveniences, a box for mailing letters, a pigeon-hole case for letters received, and racks on which are filed three-quarters of all the newspapers of the State. A register for the signatures of visitors is also kept here.

The several roof-supporting pillars in and around our plot are covered with the New "Jersey blue," and ornamented with gilt-mouldings, State and national flags, shields and guidons.

There is also an exhibit of the fishes of the State, and in the galleries will be found the educational department, the women's department and the department of colored exhibits, in all of which New Jersey is prominently represented.

Of the six days spent in New Orleans you will probably wish to spend three in looking around the city and suburbs. Indeed a month might be spent without weariness in studying the features of this quaint old town. Canal street, the French Market, Jackson Square and the old French Cathedral; the levees and the shipping, with perhaps an excursion up or down the river; the cemeteries, in which the dead are buried in vaults above the surface of the ground; the gardens, with the orange trees in full fruit; the lake resorts, West End and Spanish Fort (the Brighton and Manhattan Beach of New Orleans); the Cotton Exchange, the Custom House and the quaint

houses in the old French quarter, the battle-ground. All these are well worth a trip to New Orleans, if there were no exposition to be visited.

Now, as to the cost of a ten days' trip, we may estimate as follows :

Railway excursion ticket.....	\$45 00
Sleeping car, going.....	10 00
Meals, going.....	4 00
Room for six days.....	6 00
Meals for six days at \$1.50.....	9 00
Admission to grounds three times.....	1 50
Car fares (estimated).....	1 50
Excursions, lake, river, &c., and incidentals.....	5 00
Sleeper, returning.....	10 00
Meals, returning.....	4 00
Total.....	<u>\$96 00</u>

Of course, these figures are made on a minimum basis, and strictly from a St. John standpoint. They may easily be increased according to taste.

In conclusion, I invite you, one and all, with your friends, to visit New Orleans during the months of February, March or April. I promise you a hearty welcome at the New Jersey Headquarters, and I guarantee that you will be pleased and instructed by the Exposition and the city, and that you will return home acknowledging, like the Queen of Sheba, that at least fifty per cent. had not been communicated.

THE NEW ORLEANS EXPOSITION.

BY WILLIAM PARRY, BURLINGTON COUNTY, N. J.

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Having recently visited this metropolis of the South, it affords me pleasure to report that the World's Industrial and Cotton Exposition opened there is now in full and successful operation.

The hotel accommodations, lodging-houses, and well-kept restaurants are amply sufficient for a much larger throng than have as yet made an appearance, and prices are moderate.

Conveyance from the city to the Exposition buildings, a distance of about five miles, are abundant, by land or water.

If you take the river route there are steamers plying back and forth on the great Mississippi, the father of waters, on which the writer of this rode, in 1840, nineteen hundred miles; from which steamers there is a beautiful view of the city and surrounding country on the opposite side of the river; and an opportunity is given to form some conception of the commercial importance of this great city of the South, in viewing the broad levee, covered over with cotton, sugar and molasses, piled up by the acre. Also, may be seen the large ocean steamers and coastwise vessels which line the wharves, and carry produce to and from other countries for the benefit of all concerned.

The time required for the trip is about thirty minutes, and cost one dime; and in the city there are many street-cars running directly to the Exposition grounds that will carry passengers the whole distance of five miles for five cents, while in the city of Philadelphia to ride one square in a street-car will require an extra penny added to the nickel to satisfy the conductor.

On entering the Government Building (one of the largest in the world, being 885 feet long and 565 feet wide), we are struck with the grandeur of the scene, every State and Territory and many foreign countries being represented.

New Jersey has a conspicuous position, and her display of ores, minerals, woods and other productions is very creditable, comparing favorably with any other. Handsome photographic views of seven fine Jersey cattle from the Cinnaminson herd of Hewlings Lippincott were not surpassed by any others there. The Educational and Women's Departments are worthy of careful examination.

Passing this building is the Daft Electric Railroad, with two cars, calculated when in operation to carry fifty passengers to the Main Building, which has been called the greatest structure of the kind on earth, covering thirty-three acres of land, while the Main Building at the Philadelphia Centennial measured but twenty-two acres. The immensity and diversity of the exhibit there displayed baffles description, and to be appreciated must be seen.

Every aisle and passage-way presents something grand, unique and new. The nations of the world, civilized, semi-civilized and barbarous, have poured the wealth of their possessions into the Exposition.

On less than quarter the expense of any other world's fair, this Exposition has built itself up into the largest that has ever been seen, and contains more that is useful and grand, wonderful and beautiful, than has ever been gathered together before in the history of the universe. It stretches out with its machine shops, engine-rooms, States' collections, stock stables, poultry shows, cooking utensils, silk manufactories, dry-goods establishments, agricultural implements, art and scientific exhibits, like a city with all the life and mercantile transactions incident to a season of great prosperity.

Its success as an exposition has been fully established.

Rare trees, beautiful woods, luscious fruits, curious plants, peculiar shrubbery, sweet-scented flowers with rich, deep coloring, are there in great profusion.

Machinery Hall is well filled with grand exhibits, and the silent giant power of steam gives life and motion to all the wonder-working implements there.

On leaving this building for the Horticultural Hall, you pass over a concrete walk shaded by two rows of live-oak trees planted ninety feet apart, with their spreading branches intertwining together overhead, forming an arbor well protected from the sun by evergreen leaves and Spanish moss drooping from the limbs, wafted by gentle, health-giving breezes, glistening in the bright rays of the sun.

It was pleasant to take a seat in the comfortable chairs that lined

this beautiful walk, and watch the lawn-mowers clipping short the soft Bermuda grass. It reminded one of Fairmount or Central Park in the month of June. Those majestic live-oak trees deserve more than a passing notice as ornaments for the lawn, and where given more room, attained greater proportions; one of which measured twenty-seven feet around the butt, six feet above the ground, and the ponderous limbs, covered with drooping Spanish moss, extended seventy-five feet in all directions from the trunk, making one hundred and fifty feet in cross diameter under shade of the limbs. The model nurseries planted there last fall, were generally doing well.

The Oriental and hybrid pears sent from the Pomona Nurseries, Burlington county, N. J., were out in leaf, and the Kieffer in full bloom; strawberries and peach trees were also in bloom. There are more than 8,000 specimens of forest, fruit and ornamental trees planted in this park, embracing nearly every tree of value grown on the North American Continent.

The California tree exhibit embraces 7,000 species of valuable timber trees.

Horticultural Hall is 600 feet in length and 194 feet wide through its center. It is said to be the largest conservatory in the world. It is substantially built as a durable structure, becoming, by arrangement with the city, a permanent feature of the park. It is located on high ground, in the midst of live-oak groves.

Surmounting the center is a magnificent tower, ninety feet high, roofed with glass. Beneath this tower, in constant play, is a grand fountain, over what was originally built for a cistern by Gen. Butler when looking after the interests of New Orleans.

On large tables extending through the Hall are 20,000 plates of fruit, double the amount ever before displayed at any other exposition.

Seldom, if ever, has Pomona poured forth, in such gorgeous quantities, the rich, golden fruits of the tropics, oranges and pomegranates, with hardy apples and pears from Northern districts, mingled with the profusion of delicious fruits grown in middle or temperate zones, all at same time in one exposition, covering up tables without number, but measured by the acre, and surrounded by rare tropical and semi-tropical plants, flowers and shrubbery, agaves, cactus, royal palms of Mexico, and palmettoes of historic fame. There are more than forty varieties of palms, some of them forty feet in height. This is the

largest and most complete exhibition of winter apples ever gathered together, from fifty States, provinces and countries.

The States seem to vie with each other in their displays. Maine and Wisconsin, Ohio and Iowa, Illinois, Michigan, Nebraska and others, noted for growing fine apples, are here represented side by side, contesting for the grand prizes offered by the Exposition managers.

Arkansas has 500 plates of 200 varieties of apples, remarkable for their immense size and beauty.

Kansas exhibits 300 plates of 120 varieties. They are extremely large and come from all parts of the State.

Missouri shows 1,000 plates, comprising 200 varieties of large, beautiful apples.

Kentucky shows 300 plates of 105 varieties of apples, all of fine quality.

France sends 400 varieties of apples and 260 varieties of pears.

The far-off plains of Central Russia send fine specimens of hardy apples, large, bright and in good condition, having traveled 7,000 miles to reach this exhibition.

England sends more than 100 varieties of apples, some of which are said to come from trees older than the American nation itself.

Apples are also exhibited, of good appearance, from the table-lands of Mexico, 8,000 feet above the sea.

Opportunity is there given to study interesting problems in pomology, and compare the same variety of fruit grown in a variety of climates, soils and countries.

There is a tropical hot house, 250 feet long by 25 feet wide, in which the most delicate flowers from the far South are nurtured and made to bloom in brilliant perfection.

Tropical fruits in the various stages of growth, fruits of every season and the productions of all seasons, have, through the process of cold storage, been preserved in all their natural beauty for this grand occasion.

Thirty-six American States and Territories, fourteen foreign nations and provinces are here represented by fruits or plants—just fifty States and countries in all—Canada and Mexico abundantly. Several provinces in South America and the West India Islands have sent some of their rich productions.

New Jersey has a fine display of apples and an elegant show of

pears, both raw and canned, equal to anything of the kind on exhibition.

In the stables are to be seen the finest display of draught horses, sent there from the Northwestern States, ever shown at one time. Percherons, Normans and Clydesdales seemed to vie with each other in great strength and beauty.

Cattle, sheep, swine and poultry were about as usual at our State fairs.

The Mississippi Valley Horticultural Society being then in session, and largely represented by members from the Atlantic and Pacific Coast, the name was changed to the more appropriate and comprehensive one of American, and under that name held several meetings, and hereafter will be known as "The American Horticultural Society;" and the same excellent manager, Parker Earle, who had so long and successfully directed the affairs of the Horticultural Society under its old name, was re-elected President under the new name. The meetings were well attended, and many interesting subjects were profitably discussed.

On the 19th of January about one hundred and fifty of us, at the invitation of the Shell Beach Railroad Company, John R. Elder, President, took a ride about thirty-five miles down the easterly side of the river to Lake Borgne, passing through the rich garden-lands and sugar-plantations of Louisiana, stopping at the principal points of interest. We examined a large sugar-house and heavy machinery used to crush the sugar-cane, and roll it so dry as to make good fuel as it came from the mill. We concluded that such an important industry ought to be protected by government, and we were not ready to indorse the proposed Spanish treaty yet.

We also viewed the historic battle-ground and ancient plantation residence, surrounded with groves of live-oaks covered with drooping Spanish moss, waving in the breeze; the elegant magnolia grandifloras, luxuriating in the rich soil and mild climate so well adapted to growing them to perfection, and the flourishing orange groves, laden with beautiful, yellow fruit, bending the slender branches in graceful curves. That lovely place, with grand surroundings, was the headquarters of the British General Packingham, who did not take New Orleans on the 8th of January, about seventy years ago, but wasted powder and life before the cotton bales which General Jackson had so wisely placed to protect American soldiers from English bullets.

The recollections of those trying times, through which our government had to pass in its early struggle for existence, are calculated to fill our hearts with reverence for our country, and make us feel glad that we are Americans, and desirous always so to act as to be worthy of the name.

Our journey to the South was full of interest. Going along near the sea coast, much of the land is not yet under cultivation, but is kind, genial soil, and susceptible of improvement, needing capital and labor for its development. The climate is so mild and pleasant as to bring early fruits and vegetables, for which there is always good markets, and if a portion of the immigrants who land at Castle Garden could be directed there, it would be better for them than to go towards the Rocky Mountains where the cold winters are so long and severe.

On our return home, we came by way of Nashville and Louisville, stopping at Mammoth Cave, and took a journey of about ten miles under ground, meandering through the various halls and caverns, some of which are forty feet in height, and of greater width, beautifully ornamented by nature and wonderful to behold, far surpassing in magnitude and grandeur anything of the kind ever made artificially by the skill of man, and is well worth a journey there to see.

One important consideration, that should not be forgotten, is the cost, which may vary according to the style in which the traveler moves. But for comfort and economy, each one should allow \$100. We paid in Philadelphia, before starting, \$43 each for excursion tickets, which was about half our necessary expenses, as board, lodging and car fare, admittance to the Exposition, and other incidentals, cost as much more, making \$86 for the round trip; and those who desire to see all that can be seen in that gay city, can easily use the other \$14, making the round sum of \$100.

THE DAIRY.

BY GEORGE BLIGHT, ONE OF THE GUENON COMMISSION OF
PENNSYLVANIA.

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PENNSYLVANIA.

In the neighborhood of large cities no branch of agricultural pursuits can be carried on with more profit than a well-conducted dairy. The use of milk is so general that the supply seldom exceeds the demand. No region is more favorably situated for this purpose than the State of New Jersey, lying as it does between the two largest cities of the Union, and containing many large cities and towns of its own.

The proper selection of the cows is the first consideration—to secure such as will yield fifteen quarts, and continue to milk up close to calving. Cows of this description will consume no more food than those of an inferior quality.

Within the past two years it has been my pleasure to visit many of the dairies of this State as well as of Pennsylvania, and to converse freely with the owners upon the character of their stock—in which I notice great improvement, and, also, in the manner of conducting their dairies. Being a strong advocate of the Guenon system of judging cows, I call their attention to it. In some cases they are ignorant of his discoveries; others, again, know of him, but ridicule the idea that ovals on the bag or the mode in which the hair on the escutcheon runs, can indicate the value of the cow, but when the character of the cow is portrayed, her ability to yield as many quarts, and the time of its continuance is named, they are astonished, and want to know more about the system. In such dairies there are many fine large cows in appearance, but had the owner any knowledge of Mr. Guenon's theory, he would not have added them to his herd. The old and usual mode of selecting cows was good in its day, but this is a progressive age, and why not adopt all the means in your power to secure

your interests in this matter, as in any other pursuit of life. One charm this system possesses—it does not require you to unlearn any of your preconceived views; it aids you in your judgment and increases your knowledge of the bovine race.

That the system is complicated, and not easily understood, I readily admit; like all good things it requires some trouble and attention to obtain a perfect understanding of all the minute points, but to one whose business it is to raise heifers for the dairy or to purchase cows in the market, it is worth all the time and attention required to secure this knowledge. To open his book and find there are no less than sixty-four different forms of escutcheons is enough to confound the learner, but let me assure him that a little perseverance and application of the system will soon open the road to its easy understanding. By constant study a perfect knowledge of the case can be acquired, and the yield of her milk ascertained. Seldom have I failed to portray her true character, whether she be a milker or no.

I do not claim for this system the impossibility of error. In examining a herd of forty cows, two mistakes were made; those occurred in animals not easily classified, and therefore in going into the market to buy I would not take those not possessing the marks. They are applicable to all breeds, and belong to the bovine race.

My fondness for cattle has made me familiar with all the different breeds which have been introduced into this country. The greatest numbers have been imported from the Channel Islands, and no lover of fine stock can fail to admire their beauty and gracefulness, but how well adapted they are to the general milk dairy is yet to be maintained. Now, that the consumer recognizes the good quality of their milk and is willing to pay an additional price, is greatly in their favor and a just tribute to their excellence.

The introduction of the Friesian or Dutch cattle will prove of great value to our milk dairies. They are of large size, healthy animals and great producers, showing that much care has been bestowed upon their breeding. •

To those interested in supplying the market with butter, I strongly advocate the introduction of the blood of the Alderney cattle. I admire those from both islands. Let the farmer determine for himself. My predilections are in favor of those from the island of Guernsey, because they are larger, stronger in their constitution, are equal in their producing powers, and being of the same size with our native

stock are better adapted for crossing. The fine limbs of the Jersey bull will not give size and strength enough to the legs of his progeny to support the cow after she has reached her sixth or seventh year. My object in reading this article before you is to induce you to look into this subject and judge for yourselves whether Mr. Guenon has been deceived or not.

RAISING POULTRY WITH INCUBATORS AND BROODERS.

BY CHARLES LIPPINCOTT, CINNAMINSON, N. J.

RAISING POULTRY WITH INCUBATORS AND BROODERS.

BY CHARLES LIPPINCOTT, CINNAMINSON, N. J.

When it is remembered that the soil and climate of New Jersey are well adapted to poultry; that by location we have the two best markets of the country, Philadelphia and New York, on either side of us, with ample and cheap transportation thereto, and, also, that our poultry, owing to quality, always commands the very best prices in these markets, it should be our aim to pursue that method of raising it which is not only the most profitable, but, also, the least trouble and the most reliable.

Having made poultry raising by artificial means a subject of study as well as of careful experiment, I find it entirely reliable, practical and lucrative, and believe it destined to supersede the method now generally pursued.

Until within a few years, the idea of hatching eggs by any other than the natural method has been ridiculed as the visionary notion of some over-sanguine inventor, whose device or incubator would not give sufficiently successful results to become of any use to the community at large.

Hatchers under the names of "eccaleobions," "potolokians" and "incubators" have been invented and used with varying success in this country for more than forty years, and in England and France they have been used for more than a century.

The earliest record we have of hatching eggs artificially is that of Heroditus, in his reference to the Egyptian method of using ovens, written about 450 years before the Christian era. Subsequent ancient writers also refer to them, but it is not until A. D. 1494, nearly 2,000 years after, that we find any intelligent account of their construction. In that year, Alphonse II., King of Naples, con-

structed an Egyptian incubator, and during the same year the Duke of Florence secured the services of an Egyptian who was skilled in the art, and made an incubator after the Egyptian pattern, but neither of them was successful, owing to the difference of climate between the two countries.

According to the early descriptions, these ovens were built of mud, or adobe, and consisted of two parallel rows of ovens and cells for fire, divided by a narrow vaulted passage. They were constructed under ground, and connected with the outer air by a long ceiled passage so as to avoid cold drafts. The material used for heating them was called *gelleh*—dung collected and dried—which was kept smouldering slowly in the fire chambers above the eggs, moisture being supplied in troughs made of mud which encircle the eggs.

The climate of Egypt is particularly suited for this method, being almost uniform in temperature. Those who followed the business were bred to it from childhood, then, as well as at the present day, and the attendants literally live in them during their operation. At the present time, egg-hatching is carried on very extensively during the months of April, May and June, the eggs being supplied by the peasantry. Two systems of purchase are in vogue; under one, the hatcher buys the eggs; under the other, the owner leaves them with the hatcher at his own risk, the latter agreeing to return one chick for every two eggs. According to statistics, the business is still one of large national importance, as there are 204 establishments for the hatching of fowls' eggs, hatching annually about 17,500,000 eggs.

In China, artificial hatching has been practiced for centuries, and probably as long as in Egypt. Some of the accounts concerning their method of incubation seem hardly credible, and, although probably describing what was seen by the narrators, there were some very important points kept from their knowledge.

In Minturn's Travels will be found the following: "On our return from the gardens we stopped at an egg-hatching establishment. This was a large, wooden, barn-shaped building on the river bank. The eggs are purchased out of the produce boats that come down the river, and are here artificially hatched. The process employed is singular, using only the natural heat of the egg, and is as follows: Large baskets, each twice the size of an ordinary barrel, and thickly lined with hay to prevent the loss of heat, are filled with the eggs, and carefully closed with a closely-fitting cover of twisted straw. The eggs are now

left for three days, after which they are removed from the basket and replaced in different order—those eggs which were before on the surface being now on the lowest tier. At the end of three days more, the position of the eggs is again altered, and so on for fifteen days, after which time the eggs are taken out of the basket and placed on shelves in another apartment, and covered with bran. In the course of a few days the chicken bursts its shell and makes its way out of the bran, being at once taken charge of by an attendant, who is always on the watch. The whole secret of the process is in the fact that the animal heat of the *whole mass* of eggs being retained by the basket, which is formed of materials that do not conduct caloric, is sufficient to support the animal life of any one particular egg, and to foster its development."

Another traveler in China, in describing the hatching of duck eggs in a hatching-house, states that round baskets, made of straw, and well plastered with mud, are placed along the ends, and down the sides of a long shed, having mud walls, thickly thatched with straw.

These baskets have tile bottoms, and are placed over small fire-places. Each basket has a straw cover which is kept closed after the eggs are in, and the fire started, and a uniform heat being kept up, ranging, as nearly as could be determined, at from ninety-five to 102 degrees, without the aid of a thermometer, as the Chinamen regulate the heat by their own feelings. After four or five days, the eggs are carefully taken out to a door containing a number of holes, which have been bored nearly the size of the eggs, and the Chinese hold them against these holes and look through them towards the sun, and are thus able to tell whether the chick has begun to grow. If the germ has not started, the egg, being transparent, is laid aside as worthless for hatching, and only the eggs which are beginning to look dark are returned to the baskets, subjected to the same heat for ten or twelve days more, when they are spread on shelves, covered with cotton and a blanket, under which they remain until the young ducks burst their shells and the shed teems with life.

It is exceedingly improbable that any process so directly antagonistic to the natural system could be successfully carried out, hence I am led to believe that a very important part of the hatching process was not shown, as there must have been some *unseen* means of keeping the eggs sufficiently warm, heat being absolutely necessary to develop life as well as to sustain it.

Reaumur, the celebrated French naturalist, in 1777 constructed an apparatus for hatching eggs, using horse manure to supply the heat, which worked well in his own hands but with others did not do as well, probably owing to lack of attention and knowledge of the requisite care.

Bonnemain, a Frenchman, invented an incubator and was the first to use hot water to keep the eggs at the proper temperature for hatching, and was very successful in using it. One authority states that these incubators were used, both before and during the French Revolution, for raising broilers for the Paris markets, at a time when they could not be raised to any extent with hens.

All attempts at rearing poultry artificially, with profit, in this country, have resulted in failures *until within a few years*. Although *some* of the numerous incubators which had been invented hatched well in the hands of the inventors, they were of no practical use. They were exhibited at fairs and other places to admiring crowds, and bought by those who expected to make money by raising poultry, only to meet with disappointment.

At the present time there are many different incubators made and told which hatch eggs equally as well as hens, the chicks coming out strong and healthy, and with brooders they can be raised with little trouble and much profit.

Hatching eggs by artificial means is one of the simplest things imaginable. All that is necessary is a uniform temperature of about 103 degrees, proper ventilation and moisture and to turn the eggs. The heat is applied from above the eggs, the same as in the natural process, the ventilation and moisture from below them, while the eggs may be turned by hand, clock-work or a turner.

To raise the chicks with brooders, or artificial mothers, is less work than with hens, and much more economical.

To get the best prices for poultry in the spring, it is necessary to have them hatched out about the first of February, so that they will make fine broilers by the last of April, when, frequently, seventy-five cents a pound can be obtained for them. During the month of May, broilers weighing three pounds a pair often bring sixty, and rarely ever less than fifty cents a pound, while in June the price does not often get below forty cents if the spring has been cold, wet and unfavorable for hens to sit and rear their broods.

At these prices, it pays to raise poultry. Now, how shall we man-

age to have large numbers of chickens to sell at these fancy prices? Surely, *not* with hens. A few hens, or, if you have a very large flock, perhaps several, may want to sit early, and you may succeed in raising a few at a high price, after having made a hennery of your kitchen for weeks and exposing yourself to storms and cold, helping the old hens take proper care of the chicks. You may get a few that way, but, as a general rule, one cannot have a sufficient number hatched out early to pay for all the bother and worriment they give. Many who have for years tried to raise broilers now consider it does not pay for the trouble, but prefer to sell eggs when prices are high instead of allowing the hens to waste their time in sitting and brooding during cold and unfavorable weather, when eggs hatch poorly and the chicks are a great deal of trouble.

The farmers' wives and daughters, in all parts of the country, take great pleasure in having the care and management of the poultry, particularly in the spring, when hens are to be set and looked after and the young broods in the coops watched and fed. It is chiefly owing to their labors that the poultry and egg crop of the country annually amounts to about two hundred millions of dollars, and it is our duty to lessen their labors, as ours are, by all kinds of improved farm machinery, by furnishing them with the most suitable apparatus and appliances for rearing poultry. I mean good incubators and brooders, by means of which large numbers of chickens can be raised and sold at high prices in the spring, with less expense and very much less trouble than with hens.

It may be inquired whether these machines are not expensive in themselves, besides requiring much time and care to have them work properly. It is not necessary to pay more than \$25 for an incubator, holding 300 eggs, or \$6 for a brooder, which will accommodate 100 chicks. In Cinnaminson, where these machines are made, they are operated with as much satisfaction and profit as are the patent machines costing four times as much. A machine holding 150 eggs, and costing \$15, with a few brooders at \$6 each, will enable any one with intelligence, to hatch, not only a large number of spring chickens, but a much larger number for the fall and winter market. I have used these incubators and brooders with entire satisfaction. The brooders are the best made, being constructed on entirely new and correct principles, giving perfect ventilation with pure warm air, which constantly flows over the backs of the chickens, and the floor

under them is kept sufficiently warm, so that in the coldest weather they are comfortable. In them the chicks never smother by tramping or crowding each other, because of the adjustability of the brooder cover, and the absence of corners in which they can huddle.

These brooders should be under a warm, sunny shed facing the south, having hot-bed sash in front, to keep out cold winds, rain or snow. Hot-bed sash need not be bought on purpose, as almost all farmers have many which are not used until after the first of April, when the sash is not essential. If a brooder house is built, one suitable will cost about \$12, which will hold three brooders containing 300 chickens.

The expensive buildings and patent, high-priced incubators and brooders may do for those who raise poultry for pleasure rather than profit, and have plenty of money, but convenient, substantial brooder houses and an incubator like many of us are using, involves but little outlay for the profit received.

To operate an incubator successfully is not an arduous task, nor is there much trouble attending it. The lamps having been filled and lighted a few days before you wish to place the eggs in the drawer, and having the machine running at a temperature ranging from 103 to 105 degrees, the work of marking 300 eggs so that you may know that they are all properly turned at a glance, when you slide the turner, is about the same work as marking the same number for nests. To place them in the drawer, between the slats of the turner, is much less trouble, and much more pleasant than carrying them out of doors to twenty different places, in each of which a suitable nest must be made. There are a few easy but important labors to be attended to daily and at regular times, such as attending to the lamps, turning the eggs with the turner, and looking at the thermometers four times a day, sprinkling the eggs at certain periods, and airing them. The eggs should be tested once, in order to save the infertile ones for feed for the young chicks. During the time of hatching, the incubator, like the hens, needs more attention, as the egg-shells and dry chicks must be taken out, and the pipped eggs kept turned so that the pip is up, and the chick not smother. This work, all being in the house, is very easily attended to by a person of ordinary intelligence and judgment, with more satisfactory results than often obtained by an incubator having clock-work, batteries, thermostatic bars, mercurial balances, and other delicate contrivances intended to make it self-regulating.

An incubator can be used at any time, but hens only sit when they get ready. The proper time to commence using one is in January, not later than the middle of the month, so as to have the chicks reared by the first of May. As a rule, most hens want to sit in April or May, and their broods are not often sold till fall or winter. To attend to sitting hens is often a troublesome task. Some are disturbed by rats, and have to be moved to better quarters, which are not always acceptable, for they go back to their old nests when they leave their eggs for food and exercise; the eggs get spoiled, unless you fasten them in, and you have to put them off and on every day. Others sometimes leave their nests, the eggs get cold, the germ dies and they will not hatch. If you find their eggs before it is too late, you must either put them under another hen that may happen to want to sit, or else divide them among those who now have full nests, or ought to have, unless some heavy hens have broken some of their eggs, in which case the nests have to be cleaned out, fresh straw put in, the smeared eggs washed off with warm water, or else the nests will smell badly and the chicks die in the shells for want of air. One hen is as well satisfied, sitting on a rotten or a china egg in the next box, as if on a full nest. She has to be moved, fastened in, and put on and off her nest every day the same as other hens that are driven off by laying hens. The hens are troubled with lice sometimes, and will leave their nests unless attended to, while the laying hens break eggs by crowding on the nests with the sitters, and have their eggs spoiled if not hunted out in time. Some of the hens hatch well, some poorly, and some fail to hatch an egg. To go around to the different nests, throw out the shells and take in the chickens several times a day, requires much time and gives much annoyance. Many eggs get mashed after being pipped, chicks are trampled to death, some hens leave the nest with one or two chicks, and those eggs which are pipped, as well as the rest, are ruined.

None of these things bother one in running an incubator. But the trouble does not end here, for, after selecting, as you think, good, careful mothers and have them in the coops, you find that some hens will peck and kill all the black chicks, others will do the same with the white ones, while others trample them and eat up all the best food. You try other mothers for them with more satisfactory results. To visit these coops several times a day and feed and water them, as well as occasionally clean out or move the coops, is quite a job, particularly

after they are allowed to run and you want to fasten them up at night. You never have this trouble with brooders.

Incubators will generally hatch better than hens during the winter season. From 300 eggs it is quite common to hatch five-sixths of the fertile ones, frequently more, and occasionally less.

To take the motherless little creatures out of doors and introduce them to their foster mothers, when about a day old, is a pleasant and interesting task. By looking after them occasionally they soon become accustomed to the brooders, running in and out really as contented and happy as if they had a live mother who clucked to them, instead of a silent and inanimate contrivance made of zinc, wood and a strip of blanket.

It being natural or instinctive for young chicks to eat, the same as other very young animals, they do not require any hens to call and teach them, much less eat up a large portion of their best food, consisting of hard-boiled infertile eggs, oat meal, raw or cooked, broken rice, meat and other things which will make them grow much more rapidly than a diet exclusively of cracked corn or meal, such as is generally thrown in the coops or feeding places on dirty boards, or on the ground, much of which gets wasted or else unfit to be eaten.

To feed these little fellows with the most economy as well as satisfaction, covered troughs should be used for food and drink to prevent waste, as well as preserve cleanliness, not only of food, but of themselves, thereby promoting vigorous health and allowing a rapid growth until about the first of May, when they are fit to be killed and readily sold at a high price.

It is much cheaper to use brooders than to take up the time of the hens, when they might be laying eggs enough to pay a large part of the expenses. The cost of running a brooder is less than two cents a day for oil, as very little heat is required, not over eighty degrees after the first few days.

In brooders the chicks never are troubled with lice, never get trampled or pecked to death by careless or cross hens, they are always dry and warm, no matter what kind of weather there is; they are easily kept clean, with a few minutes' labor each day, by cleaning off the floor where they stand and saving their droppings; and, besides all these things, they are healthier and stronger and grow more rapidly than with hens.

My experience in using these brooders has been such that I consider

them preferable to hens in every respect, as a much larger percentage of the chicks can be raised and with less trouble and more profit.

Those who have never seen chicks raised by brooders have no idea how easily one can take care of several hundred, or how quickly they grow and become a source of great profit. They need attention, it is true; but that attention must be given at the right time, and in the proper manner, the same as you must attend to anything else in order to be successful.

PROFITS.

To estimate the profits of poultry-raising from results frequently obtained from actual trial and experiment, is just as proper as to estimate profits on new grapes, berries, fruit, or anything else.

The following statement concerning the results of raising poultry artificially, is based on the practical experience not only of myself, but of many others who have given this business a fair trial.

By using one incubator holding 300 eggs, four hatches can be secured by the middle of April, if operations are commenced in January. During that time, with proper care, there can be hatched from 1,200 eggs, which have been carefully gathered from good, healthy hens, at least 900 chicks. With six brooders, in warm, sunny sheds, with sash fronts and proper attention, 800 of these can be raised to weigh one and a-half or two pounds each in ten or twelve weeks. By the last week in April the first lot is ready for market; three weeks after, the second hatch is fit, and by the last of June both the third and fourth hatches are ready and sold. The first killing will bring from sixty-five cents to seventy-five cents a pound, the last not less than forty cents; averaging them at fifty cents a pound, the 800 chicks weighing 1,200 pounds, will bring \$600.

Those who have kept a careful account assert that it costs but ten cents to feed a chicken ten weeks, when it will weigh from one and a-half to two pounds. The expenses for everything attending the four hatches are as follows:

One incubator, holding 300 eggs.....	\$25 00
Six brooders, at \$6 each.....	36 00
Twelve hundred eggs, at an average of two cents each...	24 00
Feed for 800 chicks, at ten cents each.....	80 00
Oil for incubator and brooders.....	4 00

Total expenses.....\$169 00

Being a profit of \$431.00.

One person can successfully manage three such incubators, and the necessary brooders, by having a handy half-grown boy to assist in the less important work, and have a profit of over \$1,200 on broiling chickens alone, besides paying for the incubators and brooders, which can be used to raise fall and winter chickens in large numbers, much more cheaply and with greater profit than those who, at this time, the middle of April, are only commencing business by setting their hens.

Those who keep pure, new or fancy poultry, and sell the eggs as well as the fowls, will find incubators invaluable. With them, the stock can be rapidly increased early in the season, before there is any demand for eggs, and thereby obtain earlier layers and finer exhibition stock.

Any one who takes pleasure in raising chickens, for either the fall or spring market, and understands how to properly manage them, by using incubators and brooders the *profits can readily be doubled, with half the labor.*

The remarkable success achieved by those who have tried and tested this method, by careful experiment, demonstrates conclusively that this is the case, abundant and reliable testimony to this effect being very frequently published in our agricultural and poultry papers. I do not refer to testimonials published by agents or makers of incubators, but to statements of reliable parties, over their own signatures, advising their use after a thorough and practical trial.

In over two years' experience with incubators, I never had a poorer hatch than sixty per cent. of the fertile eggs, and have had as high as ninety per cent. My hens have very frequently done worse than sixty, but rarely ever any better than ninety per cent. I have successfully hatched turkey, guinea and duck eggs in the incubator, but always used natural mothers for turkeys. I never had but one failure with a brooder, and then it was the result of carelessness; have had over ninety per cent. to live, but generally about only eighty per cent. This last is better than is generally accomplished with hens. The chicks I have hatched always came out strong and healthy, and grew as well as any I ever had hatched by the natural process.

Those who have *heard* that incubators are not reliable, or that the chickens cannot be raised without hens, because they are weak, puny and unhealthy when hatched, before believing such reports had better pay some of us a visit in Cinnaminson, and see for them-

selves what large and fine lots some of us have before hens generally want to sit.

If you desire to try this artificial method, procure a good incubator, use good eggs, run it with care, provide suitable sheds or houses for brooders which warm the chicks as nearly like a hen as possible, have proper ventilation, keep the chicks dry and clean, and feed frequently on a varied diet, and you will be successful.

CANINE MADNESS IN OUR' MIDST.

BY WM. HERBERT LOWE, D.V.S., STATE VETERINARY INSPECTOR,
PATERSON, N. J.

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Although rabies is not usually classified as one of the contagious diseases, which are justly receiving marked attention, yet at certain times and in certain places it sweeps over a region of country, spreading terror among those who have sense enough to know its danger and dreadful ravages. In view of its easy and rapid communicability by inoculation, it should be regarded as one of the diseases which ought to have the attention of those who are concerned for the public health.

Several rabid dogs, and a large number of others known to have been bitten by them, as well as a still greater number of suspected ones, have been recently destroyed in Passaic and Essex counties. The outbreak of the disease recalled to my mind the experience of Dr. T. B. Rogers, of Westville, Gloucester county, in 1881, published in the State Agricultural Report for 1882. He says: "I believe rabies and hydrophobia to be on the increase in this State; indeed, no check is placed on them, and I take the opportunity of suggesting to your Board that means be taken to alter existing laws with regard to the taxation of dogs."

My views are in accordance with those of Dr. Rogers, as regards the alteration or amending of certain laws relating to the taxation of dogs. There should be power vested in proper officials to destroy dogs, on reasonable suspicion, unless owners are willing to so secure them as to render it impossible for them to transmit the disease. In the contagious diseases of animals, in many instances, the danger to human life is not so immediate and terrible as in cases of canine madness. Officials ought to have great discretionary power in dealing with suspected animals. A short time ago I was called to Montclair Heights to see a valuable sporting dog which the owner supposed to

be suffering from worms, and for which he had given him medicine before my visit. The dog showed the earlier but unmistakable symptoms of the disease. I advised the animal's destruction. The owner hesitated, and finally concluded to await developments. The dog was secured beyond the possibility of doing injury; two days afterward the owner shot him, being fully satisfied that he was mad. Though one of the Veterinary Inspectors of the Health Board, I did not feel that I had authority to order his destruction, recalling the fact that, if not mistaken, Dr. E. M. Hunt had informed me that there was no law directly relating to mad dogs, in this State, except the one which allows a town or township board of health to issue a proclamation as to dogs running at large, though I had no doubt the State Board might take such action as, in their judgment, the public safety called for. While thus embarrassed, I was fortunately successful in bringing conviction to the minds of sensible people, and persuasion to others, of the necessity of the immediate destruction of bitten and suspected dogs. While thus performing what I regarded to be a duty, the Paterson Daily Press and other papers aided me very materially in directing public attention to the subject, which resulted in the destruction of a great number of dogs, particularly in Passaic and Essex counties. The Press urged the subject on the attention of local boards of health, some of whom are inert till damage is done, or till influenced by persistent appeals. Now, when it is remembered what a vast number of curs infest most regions of country, and the facility and rapidity with which they can transmit the direful disease to man and beast, strict and adequate legal measures cannot be too soon and strongly enforced. The earlier symptoms of the disease have a practical bearing which ought not to be overlooked by the public. When they appear is the time for precaution, or, better still, for destruction. It will be better to err, if at all, on the safe side. But, if a human being has been bitten, the dog should be confined, and, for obvious reasons, till the health of the animal be ascertained. Of course, when the disease is developed, it is not likely to be mistaken. But it is very unwise in such cases to await developments. Therefore, it is well to be on the lookout for early symptoms.

At the time of the outbreak some of the facts which I urged upon public attention were briefly these: It is a popular error that a mad dog has a dread of water, so that the term hydrophobia cannot be said to strictly apply to a mad dog, for instead of having a dread of water

as that word implies, he drinks much water, often thrusting his head down to the eyes in it, trying to quench his insatiable thirst. Nor has he any fear of swimming rivers in the line of his march. That dogs are more liable to rabies in hot weather than at other times is also one of the popular errors. Another is that a dog cannot be mad if he eats well. The toxic action of certain drugs, when given to destroy the animal, may cause an ordinary observer to think that he is mad. This is also true of fits caused by derangement of the digestive system, including worms, and also of the nervous system. I may add that, contrary to the general impression, there is rarely frothing at the mouth till paralysis of the jaws takes place, when saliva may flow from it; the saliva becomes thick and viscid.

Canine madness is not always discernible in its very early stages, though, when developed, it is not likely to be mistaken, even by an inexperienced person. The period of latency is quite indefinite, and varies in different animals. There are several forms of the disease. In *dumb* rabies there is apathy. The animal remains in a curled position and cannot be aroused; he becomes emaciated and, in a week or two, dies. In the paralytic form there is dropping of the lower jaw; the whole body soon becoming so affected that the dog cannot bite, eat, drink or bark. In the *furious* form, to which the less domesticated varieties of dogs are most subject, there is redness, rolling and glaring of the eyes, irritability, quarrelsomeness and violence. As to the earlier symptoms, if the animal acts in an exceptional way, showing unusual affection, it is suspicious. There is little disposition to bite until the disease is somewhat established. While the dog is yet obedient and attentive to his master, it is easy to see the signs of the approaching malady. He becomes restless, now and then gazes strangely, is absent-minded, if such a term may be used, and appears to be tracing the path of some imaginary object. At times he is sullen, fidgety, frequently searches for new resting places, and for things he has apparently lost. Now and then he is subject to a peculiar delirium. He seeks solitude, avoids the light, tries to be alone, looks gloomy, and, if he tries to eat, drops his food when partially masticated. He will drink much water. As the disease advances his appetite is not merely perverted, but depraved—not lost; and after death very incongruous substances may be found in his stomach. He gnaws at rags, shavings, bits of wood, tosses his bed about, bites at straws, bites his kennel, snaps at flies, or the heads of nails, and, being unable to

measure distances, dashes himself against the objects he aims at. With his fore paws he strikes his throat and jaws fiercely, is subject to sudden passion, and if within his reach will bite dogs, cats, or anything else without provocation. Soon the eyes move slowly, the head droops, suddenly he starts, seems as if he were surrounded by objects of terror; then he snaps, barks, bites and howls. His coat starts and his skin sticks to his ribs. He is the victim of a thousand phantoms. In savage dogs the eyes are sometimes like balls of fire, and the conjunctiva is highly injected, but within a few hours the eyes become dull and wasted. In the violent paroxysms he no longer recognizes his former friends. Paralysis sets in, first in the hind legs, then involves the whole body, and death relieves the sufferer.

At a certain stage of the disease the rabid dog takes long journeys, perhaps thirty or forty miles in length, spreading destruction in his path. He does not run, nor does he walk, but has a slouch-like trotting gait, his eyes no longer staring and glaring, but dull and retracted. His tongue hangs dry and black from his open mouth. If permitted to go his way uninterruptedly he may not go out of it to do mischief, but if anything comes in his road he will snap, become enraged and bite everything he can while his strength lasts. His throat is swollen, but he cannot now swallow water, for which he has a most intense craving. His stomach and bowels are inflamed—burning—he suffers most excruciating pain.

The pathological anatomy of the disease would hardly interest the general reader. The most recent and valuable researches on this branch of the subject are by the French investigator Pasteur, and in our own country by the distinguished pathologist, Dr. T. E. Satterthwaite, of New York. But even their enlightened researches still leaves much obscurity, though exceedingly interesting and important, from the scientific standpoint.

NEW JERSEY
Agricultural College Farm.

REPORT FOR THE YEAR 1883-4.

BY GEORGE H. COOK.

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THE WEATHER AND THE SEASONS.

The record begins with December, 1883, and ends with November of the current year. The autumn of the year 1883 was warmer than usual, and November was remarkably mild and deficient in the amount of rain-fall. The winter of 1883-84 was noted for its mean low temperature and its steady weather up to the close of February. The rain and melted snow was 4.30 inches in excess of the average winter rain-fall. The spring was, on the average, warm, and the total rain-fall 1.44 inches below the mean amount for that season. Like the winter preceding, it was marked by its evenness of temperature, and the lowest thermometer readings for the months of April and May were 13° and 15° , respectively, higher than the minima for these months. There was a slight deficiency in the amount of rain in the late spring and early summer, but not to cause any suffering to growing crops. The summer was a remarkable one for its pleasant weather, and its evenly-distributed rain-fall. The extreme range of temperature for the season was only 45.5° . This range was due to the absence of excessively high temperatures, and the maximum for the summer was only 89.5° . In this respect the season resembled the summer of 1883, and, like that, was favorable to growing vegetation of all kinds. The dry and parched soil, so common a feature of our summers, was not observed. The crops of grain and hay were good. The autumn began with a very warm September, and the warmest and driest weather of the year occurred in that month. The total rain-fall was 0.37 inch only. The dry weather favored the maturing

of the corn crop, and the absence of frosts allowed the continued growth of not only the corn but also the grass crops, making the late pasturage abundant and of good quality. During October the weather continued favorable to the growth of the corn and grass, and there was a limited range of temperature and slight deficiency in rain. November, also, was even in temperature and with an average of rain-fall, and the frost kept off until late in the month. Reviewing the year, the weather may be said to have been, on the whole, favorable to vegetation, and the crops were good.

The maximum and minimum temperatures per month, as compared with the extremes of those months during the periods 1863-1870 and 1876-1884, are given in the following table:

MONTHS.	1863-1870 & 1876-1884.		1884.	
	Maximum.	Minimum.	Maximum.	Minimum.
January	67	-12	45.5	5
February	67	-10	59	6
March	77	4	62	7
April	81	21	68.5	34.5
May	98	29	85	44
June	98	46	89	45
July	101	56	88.5	59
August	99	48	89.5	51
September	103	42	90	47
October	89	29	79	33
November	74	11	64	23
* December	65	-8	55	2
Year	103	-12	90	5
Range		115	95	

* December, 1884, wanting.

RAIN-FALL AT NEW BRUNSWICK.

The total precipitation of rain and snow (measured in volume of water after melting,) for the months of the current year, and the average monthly for the several months of the year, are given in the following table. The record is made from observations at the College to the end of 1867; since that time from the observations made by P.

Vanderbilt Spader, Esq., at his residence in New Brunswick. The record closes with November, 1884, and the December rain is for the year 1883 :

MONTHS.	1854-1884.	1884.
	Inches.	Inches.
January	3.51	5.63
February	3.29	5.28
March	3.52	4.23
April	3.71	2.20
May	3.81	3.17
June	4.00	5.24
July	4.68	4.80
August	4.77	5.03
September	3.62	0.37
October	3.32	3.16
November	3.62	3.60
December	3.42*	3.61†
Year	45.27	46.42

* Wanting, December, 1884. † December, 1883.

CROPS.

The following is a statement of the use made of the farm during the past year :

Crops.	Acres.
Indian corn.....	16.66
Oats.....	9.81
Wheat.....	11.82
Rye.....	6.02
Potatoes.....	1.75
Meadow.....	81.79
Fodder corn.....	6.10
Fodder sorghum.....	.80
Pasture.....	5.00
Pig pasture.....	.75
Vegetable garden.....	.48
Sorghum sugar cane	2.08
	<hr/> 93.06

The buildings, yards, roads, fish-pond and its margin occupy the remainder of the farm, which is 97.4 acres in area.

Indian Corn.—The corn grown on the ground which was in meadow last year was a heavy crop ; that grown on ground which was in corn

last year was not quite so good, though the soil was richer, and a smaller plot, grown on inverted sod, was much damaged in coming up, so that the yield was small. There were $16\frac{2}{3}$ acres, and the whole crop was 856 bushels of shelled corn, which makes an average of 52 bushels of shelled corn per acre.

Oats.—Following the usual rotation on ground not well suited to the growth of potatoes, oats was grown on the field which was in Indian corn last year. The field contained 9.81 acres, and the crop was a very good one. It is not yet threshed, but the part on the experiment plots, which were on 1.1 acres of it, have been threshed, and the record of them is to be found in this report under the account of Experiments with Fertilizers on Oats. The two plots in these experiments, which were without any fertilizers, yielded at the rate of 51 bushels per acre.

Wheat.—The crop of wheat was grown on the poorest part of the farm. The surface is too flat to admit of quick drainage, and the soil is not in as good tilth as the older parts of the farm are. The wheat was drilled in, and manured with 200 pounds of Peter Cooper's bone dust, and, in the spring, 60 pounds of nitrate of soda per acre. The crop was not as good as we hoped for, but it averaged throughout 26 bushels per acre.

Rye.—With a large herd of cattle, we find it safe to grow a considerable quantity of rye, so as to have early green forage if other supplies of fodder should fail. Besides this, too, it sometimes happens fields intended for grain, followed by grass, are not ready to be sown from September 20th to October 1st, the time when wheat must be put in if a good crop is to be secured. In this case, rye, which can be put in any time from August to November, is substituted, and in many instances the value of the grain and straw together is quite as great as it would have been from a crop of wheat. We had 6 acres of rye, and the grain harvested was 224 bushels, which is 37 bushels per acre.

Potatoes.—An acre and three-quarters of ground was planted with potatoes. It was raw ground, in good condition and well manured from the barnyard. The crop was 175 bushels, which is 100 bushels per acre.

Hay.—The hay crop was not near so heavy as in some former years. Dry weather for a short time, when the grass should have been in its most rapid growth, hindered its full development. The effect was most apparent to the sight, in the failure of most of the clover-heads to come out in full flower. Fifty-four two-horse loads were put in the barn. A considerable crop of hay was secured from a second mowing.

Fodder Corn.—Six acres and ten-hundredths of land were put in fodder corn, early. The ground was well manured, and part was put in drills and another part was sown broadcast. We hoped that in drills would stand up best, but we found little difference in this respect. Planted in either way, it is liable to be blown down in heavy rains, when they are accompanied by wind. The common yellow dent corn grown on the farm was used for seed. In several trials as to the amount of green fodder corn grown at the rate of per acre, from 29 to 31 tons were obtained.

A portion of this fodder corn was cut and fed to cows directly from the field. Another part was cut up into ensilage and is preserved in a silo.

About 4 acres of fodder corn was grown as a second crop, after rye. This grew finely and to sufficient size before the time for frost. The stalks were much slenderer than in ordinary field corn. They were cut with a reaper, set up in shocks and left to cure in the field. It produced a fine lot of fodder, is eaten up almost clean by the cattle, and has been produced with the smallest amount of labor.

Fodder Sorghum.—The ordinary amber cane seed, planted thick in drills, produces a crop which is very sweet, and is eaten with avidity by cattle and swine. A patch of .80 of an acre was planted, and when the seed began to harden, portions of the cane were cut and shredded from day to day and fed while fresh to the cows, with satisfactory results, until the crop was exhausted. Some of the green stalks from the other sorghum plot were cut and put up in shocks, and now, after standing 6 or 8 weeks, the stalks are still juicy, and when put through our cutter and crusher, are relished by our cattle. This trial indicates that our green fodder may be continued much later in the season than it usually has been. The trial, however, must be repeated before we can speak with much confidence in regard to it.

Pasture.—The 5-acre field is the only pasture we have for our cows. It supplies a large amount of food, besides being a good exercise ground, but, of course, its whole produce is but a small portion of what is needed for our stock, and the main dependence is upon soiling.

Pig Pasture.—We find the grass grown upon this little plot of ground furnishes a considerable part of the food needed for the small herd of swine kept on the farm.

Vegetable Garden.—In common with many others, we grow the vegetables needed by those on the farm in the fields, and in the same way with other cultivated crops. The plants and seeds are put in rows which can be ploughed and cleaned by horse and cultivator, and in this way produced with the smallest amount of manual labor. On this account the plot is changed every year.

Sorghum Sugar Cane.—The ground needed for the continuance of experiments on the growth of this crop, was 2.08 acres, and we get from 1.6 acres of it 47.87 bushels of sorghum seed, which is 29.9 bushels per acre, and a considerable amount of the green leaves and stalks for green fodder and ensilage. The results of the sugar produced are given under the head of Experiments, which see.

Turnips.—Two and a half acres of turnips were grown as a second crop, after hay and rye. They were checked in their growth by the drought in September and October, so that the crop was very light—only about 250 bushels. In ordinary seasons the crop is much larger, and the turnips and their tops furnish a convenient and wholesome food for cattle, and one that is grown with very little expense.

STOCK.

The stock kept upon the farm consists of forty cows, which are kept for producing milk for market. These cows are bought from the common stock when fresh, and most of them are sold to the butcher when they are dry. A few of the best are kept over. No young stock is grown. These cows are kept up in stables, except for a few hours each day. Green fodder is cut and fed to them instead of the pasture. During the year beginning December 1st, 1883, and ending November 30th, 1884, there has been sold—

82,320 quarts of milk inJersey City.
83,984 quarts of milk in.....New Brunswick.

116,254

A few swine are kept for the farm use.

A pair of mules and three horses are kept for farm use, and one horse is kept for distributing milk to customers in New Brunswick.

EXPERIMENTS.

Indian Corn.—The experiments to show the effects of different single and mixed fertilizers upon the growth of Indian corn have been made this season. Plots of one-tenth of an acre each were used. The field was in corn last year. The soil is a gravelly loam, in a good state of fertility, and was thought to be of uniform quality in all the plots. The following tabular statement shows the results of the season's experiments :

TABLE—INDIAN CORN.

Number of Plot.	FERTILIZERS.			YIELD PER ACRE.		
	KIND.	Amount per Acre.	Cost per Acre.	Ears.	Shelled Corn.	Stalks.
		Pounds.		Pounds.	Bushels.	Pounds.
1	Nothing			4,050	57.9	2,650
2	Nitrate of Soda.....	150	\$5 85	5,000	71.4	3,500
3	Superphosphate.....	350	5 25	3,950	58.4	2,900
4	Muriate of Potash.....	150	3 75	4,500	64.3	3,300
5	{ Nitrate of Soda.....	150 }	11 10	4,700	67.1	3,300
6	{ Superphosphate.....	350 }				
6	Nothing			4,800	68.6	3,300
7	{ Nitrate of Soda.....	150 }	9 60	5,150	73.6	3,750
8	{ Muriate of Potash.....	150 }				
8	{ Superphosphate.....	350 }	9 00	4,850	69.3	3,750
9	{ Muriate of Potash.....	150 }				
9	{ Nitrate of Soda.....	150 }	14 85	4,600	65.7	3,750
10	{ Superphosphate.....	350 }				
10	{ Muriate of Potash.....	150 }	1 60	4,070	58.1	3,400
11	{ Plaster.....	400 }				
11	Fine Barnyard Manure { 20 2-horse loads. }		30 00	5,670	81.0	4,150

The experiments are not very clear in their teaching. They do not correspond with those of preceding years. And we fear there may be some undetected error in observation or work, or that some of the crop has been stolen, as it is exposed near the city; but we publish them as they were made up.

Wheat.—Experiments were made to test the effects of woolwaste, obtained from a woolen mill, upon the wheat crop. The field on which the experiments were made is very flat, and not so well drained as it should be. The soil is a gravelly loam, rather heavy, and has been cleared but a few years, so that it is not as well enriched as it will be. A crop of oats preceded the wheat.

The objects of the experiments were to test the effects of this highly nitrogenous waste product upon the growing wheat crop. The plots were laid off in long, narrow strips, so as to do away with any *ill* effects from inequalities in the soil of different plots. The woolwaste contained 6.95 per cent. of nitrogen.

TABLE—WHEAT.

No. of Plot.	FERTILIZERS.		YIELD PER ACRE.		
	KIND.	Amount per acre, Pounds.	Pounds.	Bushels.	Straw, Pounds.
1	Nothing.....		915	15.2	1,335
2	Caustic Potash.....	90	1,090	18.1	1,760
3	Superphosphate.....	35	1,185	19.8	1,845
4	{ Superphosphate.....	35	1,455	24.3	2,445
	{ Caustic Potash.....	90			
	{ Woolwaste.....	200			
5	Woolwaste.....	200	1,202	20.0	1,948

Among waste products from manufacturers, wool and hair are common, and they are well known to be valuable as fertilizers when properly prepared. There is no important difference in the composition of the two substances, though they are in some circumstances slow in decaying. The result of the experiment is, that the wheat was increased by the woolwaste alone nearly five bushels an acre, and by the use of woolwaste, dissolved by caustic potash and a little superphosphate, it was increased 9.1 bushels. There is some increase by the use of superphosphate alone, and also of caustic potash alone, but the increase by

the mixture on one plot of ground is nearly as much as that on the three plots, where the three substances were applied separately. The soil on which the experiment was made is not in very good condition. The experiment is being repeated this year on more responsive soil.

Oats.—Experiments were made upon oats grown on the experimental plots, on which corn was grown last year. The size and numbering of the plots were the same as last year, and the several fertilizers were applied also to the same plots that they were then. The soil is a mellow, gravelly loam, in a good state of fertility. The following are the results of the several experiments:

TABLE—OATS.

No. of Plot.	FERTILIZERS.		YIELD PER ACRE.		
	KIND.	Amount per Acre, Pounds.	Pounds.	Bushels.	Straw and Chaff, Pounds.
1	Nothing.....		1,280	42.0	1,540
2	Nitrate of Soda.....	150	1,490	49.6	2,210
3	Superphosphate.....	350	1,340	44.7	1,560
4	Muriate of Potash.....	150	1,420	47.3	1,580
5	{ Nitrate of Soda.....	150 } 500	2,000	66.7	2,400
	{ Superphosphate.....	350 }			
6	Nothing.....		1,820	60.7	1,880
7	{ Nitrate of Soda.....	150 } 300	2,140	71.3	2,610
	{ Muriate of Potash.....	150 }			
8	{ Superphosphate.....	350 } 500	1,960	65.3	2,140
	{ Muriate of Potash.....	150 }			
9	{ Nitrate of Soda.....	150 } 650	2,145	71.5	2,525
	{ Superphosphate.....	350 }			
	{ Muriate of Potash.....	150 }			
10	Plaster.....	400	1,795	59.8	2,160
11	Fine Barnyard Manure.....	{ 20 2-horse loads. }	1,985	66.7	2,720

The heaviest yield is from the complete manure, No. 9.

The straw is uniformly heavier where nitrate of soda was applied, as in plots 2, 5, 7 and 9.

The heaviest yield of straw was on the plot manured from the barnyard.

The ripening was earliest where superphosphate was applied.

Sorghum.—This crop was grown to use in determining the amount of sugar contained in canes of sorghum grown on measured plots of ground, when the soil was enriched by different fertilizers and by barnyard manure. The soil of the College farm is liable to suffer from droughts, and from heavy, pelting rains; and the sorghum field was one of the worst. The sorghum came up very slowly, and the stand was not good. The crop was a poor one. Indian corn grown on a plot adjoining did not yield more than half a crop. The table below gives the result of the experiments with it:

SORGHUM.

PLOT.	1	2	3	4	5	6	7	8	9	10	11
				Potash, 75 lbs., from Muriate of Potash.	Nitrogen, 22½ lbs. Phosphoric acid, 52½ lbs.	Nothing.	Nitrogen, 22½ lbs. Potash, 75 lbs.	Phosphoric Acid, 52½ lbs. Potash, 75 lbs.	Nitrogen, 22½ lbs. Phosphoric Acid, 52½ lbs. Potash, 75 lbs.	Land Plaster, 400 lbs.	Nitrogen, 204 lbs. Phosphoric Acid, 164 lbs. Potash, 200 lbs. Twenty (20) Tons Barn-Yard Manure.
KIND AND QUANTITY OF FERTILIZERS USED PER ACRE.											
Cost of Fertilizers per acre.....	.....	\$4.05	\$5.25	\$3.19	\$9.30	.....	\$7.24	\$8.44	\$12.49	\$1.50	?
Pounds of Sorghum per acre.....	24850	26373	27889	29972	28075	23689	28993	27928	27802	24949	32571
Tons of Sorghum per acre.....	12.4	13.2	13.9	15.0	14.0	11.8	14.5	14.0	13.9	12.5	16.3
Percentage of Leaves.....	8.53	8.92	8.04	10.06	8.60	9.89	10.24	9.09	8.02	8.61	8.42
Per cent. of Stripped and Topped Cane.....	80.00	78.29	81.96	78.35	80.80	78.80	77.71	78.64	80.10	79.17	79.07
Pounds of Stripped and Topped Cane per acre.....	19880	20647	22858	23483	22885	18687	22530	21963	22289	19752	25754
Per cent. of Sugar in Stripped and Topped Cane.....	9.20	8.25	7.61	8.69	7.94	8.62	8.78	8.34	8.77	8.83	8.29
Total Amount of Sugar in pounds per acre.....	1829	1708	1739	2041	1801	1609	1978	1832	1953	1744	2135
Bushels (56 lbs.) of Clean, Dry Seed per acre.....	27.4	31.0	26.7	33.5	31.5	25.4	35.1	36.3	33.5	26.0	36.4

NEW JERSEY

State Agricultural Society.

Annual Meeting held at Trenton, January, 1885.

Annual Fair held at Waverley, September 14-18, 1885.

STATE AGRICULTURAL SOCIETY.

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Gen. JOHN S. IBICK.....Vincentown.....Burlington county.
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E. G. BROWN, R. H. ALLEN, E. B. GADDIS, HENRY P. JONES,
WILLIAM L. TOMPKINS.

STATE AGRICULTURAL SOCIETY.

PRESIDENT'S ANNUAL ADDRESS.

Gentlemen of the New Jersey State Agricultural Society :

As is the custom, the Secretary will give you a full and complete report of the business and transactions of the past year, and as I do not wish to encroach upon it, it suffices for me to state that it is under very favorable auspices we meet here to-day.

Our Society has no debt, and is steadily advancing in all that goes to make an agricultural society a success. Our last fair was one of the most successful ever held, especially as to exhibits and attendance, and I think that on Thursday, September 18th, the fair grounds held a larger number of people than they ever did before on any one day.

It has been very gratifying to all the members of this Society, and especially the Executive Committee, that this Society has not only done a great deal towards fostering all the agricultural and mechanical industries of this State, by offering large premiums, (and at no time has the Society hesitated to appropriate money to advance the interests of the pursuits mentioned above, as we will this year pay in State premiums an excess of some \$700 over and above the State appropriation,) but that the Society is at last ready and willing to pay a dividend to its stockholders, which not only seems proper, but right, when the fact is considered that for a number of years they have received no remuneration for their outlay.

And it may not be amiss for me to say, that I consider our grounds, with their acres of land, improved buildings for horses, cattle, poultry, and all the numerous improvements that have been lately made, as a very fair showing for the small capital invested by the stockholders, and with the present outlook it seems as though our future success is assured as well as future dividends.

And let me say, gentlemen, that I consider our success, as a Society, as largely due to the untiring efforts of the gentlemen who have

devoted so much of their valuable time and labor to the advancement of the several departments in their charge.

Mr. E. G. Brown, who for years past has had charge of the grounds, and, also, the erection of the new buildings of the Society, has, in the above position, fulfilled his trust to the satisfaction of the members of this Society, and, also, to the permanent advantage of the grounds and buildings.

Mr. E. B. Gaddis, in charge of the speed department, one of the most trying positions during the fair, to which he devoted much time and labor, before and during the fair, to the satisfaction of every one, especially the exhibitors, who were highly pleased with the efficiency of the management of the department.

Mr. William L. Tompkins, in charge of the State department, a position which was entirely new to him, but, nevertheless, owing to the persistence and zeal with which he carries on the affairs of his department, we had one of the finest displays of cattle, &c., ever witnessed in this State, and, notwithstanding the large amount of ground to be covered by his department, we did not hear of a single complaint against the management, and the State and Society should feel proud of an officer who has so carefully looked after their interests.

I cannot forbear mentioning the name of E. A. Wilkinson, another member of the Executive Committee, who so ably received the guests of the Society during the fair, especially in the case of our distinguished guest, Gen. Butler, whose reception proved to be one of the most trying the Society ever took in hand, and we must compliment Mr. Wilkinson on the masterly manner in which he conducted both the reception, and the retreat of the general.

But, gentlemen, as we are here to-day congratulating ourselves on our success, do not let us pass over the memory of those who were with us one short year ago, whose smiles, good words and sound advice, has done so much to add to that which makes us rejoice to-day. The original and greatest promoter of this Society, Gen. N. N. Halsted, will meet with us no more; sad and sudden as was his death, let us hope that for that which he has done for others, his memory will always remain fresh in the minds of Jersey men.

And, gentlemen, who at our last meeting took a deeper interest in the welfare of this Society than the Hon. Phineas Jones, whose seat is vacant here to-day? For upwards of fifteen years did he serve this

Society faithfully and earnestly as a member of the Executive Committee. To him the Society is largely indebted for interesting the Legislature in the matter of State premiums, which premiums have so largely encouraged cattle breeders and all who are interested in agricultural pursuits. He accomplished more than this, but his works speak for themselves, and I need not refer to them. Suffice for me to say, that he looked more to the building up of all the agricultural pursuits of this, his adopted State, than he did to any pecuniary reward from the large amount of stock which he held.

Then too, our associate, Col. Buckalew, of whose sound judgment, never-failing spirits, and great amount of business experience, is such a loss to this Society as it cannot easily repair. His association with us since the commencement of our existence, has added much to our element of success, and we deeply feel our inability to have more publicly recognized our loss at the time of his death, which inability we hope in some part to atone for him to-day.

Finally, gentlemen, let me say that experience is the teacher of all, and no business or association can be managed successfully without it. To this then, gentlemen, can you ascribe much of your success. Your Executive Committee and Secretaries have long been studying and comparing the results of other kindred organizations with our own, to discover if possible all those elements which will add to our success; and they have, and will continually endeavor to correct and cut off those things which tend to lessen it.

SECRETARY'S ANNUAL REPORT.

To the Stockholders of the State Agricultural Society :

GENTLEMEN—Another year has quietly rolled past, and the stockholders of the State Agricultural Society have again assembled to fulfill one of the provisions of the charter and by-laws of this organization. This provision, and the duty it imposes on the stockholders, is, first, to listen to the annual reports of the officers and the Executive Committee of the Society for the year just closed, and, secondly, to elect a full Board of Directors to serve for the ensuing year. Since the organization of this Society in 1866, its career has been singularly fortunate in most respects. It has not always been profitable to the stockholders in the way of returning yearly dividends on their capital invested. There have been many years when the stockholders received

nothing except some passes to the grounds during the week of the exhibition; but, aside from this fact, the Society has from year to year grown more popular among our best farmers. The different departments have steadily increased in their number of entries, and, what is more noticeable, the quality of the goods and stock has kept pace with the increased number of entries. Again, there has been a uniformity of improvement in every department, which is pleasing alike to the managers, exhibitors and the visitors. There is no one department of this Society which towers far above the rest, either in the number of entries or the quality of the goods. In other State societies, such a uniformity is the exception rather than the rule; and when it is the case, more or less of the visitors are likely to be sorely disappointed. The managers of our State society have taken great pains, from year to year, to avoid such a condition of affairs at our annual exhibition. On this point, if on nothing else, the directors deserve warm praise and congratulations, for it's one of the features of our annual exhibitions which has added largely to their popularity.

The question is often raised by "doubting Thomases" what good comes from these exhibitions to our farmers, and what influence they have on improving the condition of our agriculture. To such doubters we would say that the question has long since been settled by the most intelligent farmers in every State where agricultural pursuits are followed to any extent, and by every country governed by an enlightened form of government. In our own State such exhibitions are of paramount importance, and will continue so in the future for reasons which are known to the intelligent, and they will be stated in brief for the benefit of those who have not given the subject consideration: As a State we are favorably located for carrying on successfully the most profitable branches of what may be termed mixed husbandry, and for raising perishable products such as can be grown with the largest profits for near or home markets. In our own State may be found all sorts of soil, from the light sand, rich loam, to the heaviest clay. All of these soils can be improved, increasing their producing capacity three to fourfold by practical systems of manuring and culture, and the expense lessened by the use of labor-saving implements and machinery. The strong incentive to carry out these modern methods is the fact that the producer and consumer are near together, and nothing is wasted or lost by long transporting of such goods. In this respect we are peculiarly fortunate, as a State and citizens of the

same. Leaving out the great social, religious and intellectual advantages from such surroundings, from a purely mercenary standpoint our advantages are numerous and striking, and my statement will be borne out by the figures which have been compiled from time to time by the State and the National Government. But in order to avail ourselves of our superior advantages, it is of importance that these facts should be made conspicuous and placed before our eyes in all their forms. One of these methods, and without doubt one of the best, is to bring our farmers from all parts of the State to a common meeting-place once a year, and then and there show our most improved implements and modern inventions, our best breeds of horses, neat cattle, sheep, poultry and swine, the products of the farm, garden, dairy, orchard and vineyard. Following this line of practical reasoning, the State Society has in the past and will continue in the future to use their best efforts to bring together at Waverley the most improved farm machinery, the best horses, herds of cattle, and the choicest products of the farm, orchard and garden. With a continuance of this policy in offering liberal inducements in the shape of cash premiums in every department, the success of our Society will go on from year to year, being a credit to the managers and of signal service to every man who owns and cultivates an acre of land in the State. But, aside from liberal premiums, there are other and important features that should not be overlooked. These are suitable sheds and stables for cattle and horses, permanent and substantial buildings for manufactured goods, an extension of the grand stand, one-third larger than its present size—these, with the construction of a two-story building with a basement, on the hill, for farm, garden and floral exhibition, which is growing in size and interest every year. All of these improvements will have to be made within a year or two, if our Society purposes to hold our position as a progressive association, as well as a matter of necessity from a purely business standpoint. There is no question that the more attractive and convenient we make our grounds, the more patronage we will receive from the public. There is no doubt in my mind that for every dollar judiciously expended on the grounds at Waverley in the way of improvements, but that the receipts will be increased twofold. These suggestions, which are really facts, relate to the enclosed ground; but outside of the grounds there are matters that should not be overlooked.

In my report of a year ago, I suggested to the Executive Com-

mittee the importance of having horse railroad communication with Newark. I am more thoroughly convinced now that such communication would add thousands of dollars to our annual receipts. With such facilities of reaching the grounds there would be constant demand for them during the summer months, by societies who now go elsewhere for their annual days' amusements and sports. The Waverley Grounds are better adapted for picnics than anywhere else within twenty miles of Newark. But they are not used for such purposes during the summer months, solely because there are no horse railroads running from Newark to the grounds. A concentrated effort on the part of the Executive Committee, I firmly believe, would have this very desirable improvement carried out. Such an improvement would add largely to the annual receipts of the Society, and at the same time would be very acceptable to the public. These matters are rather personal than general, for they principally refer to improvements necessary to meet the growing demands of the Society, to give better accommodations both to the exhibitors and visitors. It is of the first importance to satisfy, as near as can be, those who bring their goods and stock on the grounds for exhibition, and secondly, to make the grounds easy of access from all points, both by steam and horse railroads.

I have stated that our society has been singularly fortunate and successful in many respects since its re-organization, and steadily grows in favor with the public. There can be no better test to demonstrate this fact than to look back at the entry books for the past dozen of years. In 1873, the total number of entries made in all the departments was 1,968. In 1884, last year, the total number of entries made amounted to 5,885, an increase in eleven years of three hundred per cent. in the number of entries. In 1884, the total number of entries in department C, which includes farm, garden and orchard products, was 1,998, or thirty more entries in a single department than were made altogether in 1873. In department B, which takes in neat cattle, sheep, swine and poultry, in 1873 there were 406 entries, and last year there were made in the same department 984 entries. In department D, in 1873 there were 431 entries, and in 1884 there were made in the same department 1,269. I mention these few leading departments, to show the growth in the number of exhibits, and this growth runs through every department in the schedule of premiums. In 1873 the cash premiums paid by the

Society were under \$6,000, while in 1884 the cash premiums will come near \$12,500, and as the number of exhibitors increases, the cash premiums will necessarily follow. But there is one fact coupled with this vast increase in the volume of business, that is, the society pay its officers now the same sized salaries they did in 1873. There has been no increase in that direction.

TABLE OF ENTRIES FROM 1874 TO 1884.

The following table gives the number of entries in each department, and the total number of entries each year since 1873 :

DEPARTMENT.	1874.	1875.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.
Special State.....	59	70	106	106	148	124	170	146	149	106	155
Speed.....	52	98	105	99	98	149	.....	108	126	107	66
Department A.....	107	72	68	78	76	78	109	62	75	46	.....
B.....	892	431	633	715	818	757	950	963	837	845	984
C.....	817	961	1,005	1,456	1,140	1,763	1,697	1,492	1,467	1,913	1,996
D.....	548	701	705	1,416	946	702	1,122	1,091	1,021	1,182	1,269
E.....	164	182	233	256	291	415	540	793	521	477	689
F.....	82	154	139	207	192	263	275	232	207	338	219
G.....	69	72	16	40	47	28	49	50	60	57	83
H.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
I.....	29	52	36	37	.....	211	204	{ 86	64	52	57
J.....	.....	.....	.....	.....	.....	.....	.....	{ 121	85	85	112
K.....	97	114	115	136	214	142	177	183	265	300	219
L.....	81	97	88	140	169	15	84	72	77	55	60
M.....	.....	.....	.....	.....	.....	.....	.....	.....	86	16	24
Total.....	2,447	3,004	3,249	4,681	4,129	4,687	5,491	5,894	4,967	5,559	5,885

The wisdom of the State Premium Committee in offering liberal cash premiums, for farm, garden, orchard and vineyard products, by the acre, needs no further indorsement than the report of the premiums awarded and read here this morning. The average yield of wheat in this State is about thirteen bushels to the acre; potatoes, seventy-four bushels; corn, forty, and oats, twenty-three. Yet with good culture, judicious manuring and intelligent direction, we have in this report from valuable practical farmers, verified by affidavit, on from one to five-acre lots, forty-six bushels of wheat to the acre, three hundred bushels of potatoes, ninety-seven bushels of shelled corn, and equally large yields of other vegetables and fruits. Such facts made public by this Society and the State Board of Agriculture, in their annual report, shows first, that our soil is capable of producing three to four fold what it does; and, secondly, it is a strong incentive to others to try and do likewise. It may be well to state, just here, that our Society paid out the last year \$950 for these premiumed farm crops, outside of the \$3,000 coming from the State; and there is no doubt that the investment will be productive of beneficial results. The

more widely these statements are read by our farmers, with the assurance from such sources that our soil is capable of producing such yields of fruits, grain and vegetables, under intelligent direction, the sooner the masses of our farmers will make efforts to equal those large crops, and in this way raise the productive standard far above its present status. It is not generally known by our own citizens the relatively high position we take as a State in agriculture and horticulture when compared with other States. The census taken by the government in 1880, is the most reliable data we have, and I tabulated the following:

Taxable value of an acre in

	Value of Acre.
New York.....	\$44.41
Pennsylvania	40.30
New Jersey.....	65 10
New Hampshire.....	20.38
Illinois.....	31.87
Virginia.....	10.89
Kentucky.....	13.92
Georgia.....	4.30
Mississippi.....	5.86

The yield in dollars from each acre—

United States.....	\$7.77
Connecticut.....	10.97
Illinois.....	7.81
Indiana.....	8.24
Massachusetts.....	11.34
Ohio.....	8.66
New Jersey.....	14.14

In 1879, each acre sown with seed of corn, wheat or oats, produced in the

	United States.	New Jersey.
Corn.....	24.6	28.9
Wheat.....	13.6	13.6
Oats.....	26.14	29.2

What persons engaged in farming are worth—

United States.....	\$1,578
Connecticut.....	3,070
Illinois.....	2,688
Indiana.....	2,195
Massachusetts.....	2,529
Ohio.....	3,496
New Jersey.....	3,591

What agricultural labor receives in our State—

United States.....	\$314.63
Connecticut.....	409.08
Illinois.....	467.51
Indiana.....	346.30
Massachusetts.....	371.46
Ohio.....	394.41
New Jersey..	500.00

These few I have selected from many instances equally favorable to our little State when placed in competition with other States having more surface but not as convenient to home markets. I have another object in view: that is, to show that the labor of our State and county societies has had a marked influence in promoting our rural interests, and there is still a wide field in which to continue in pushing forward this work—a work that has been one of love to many connected with and earnest co-laborers in our Society for the last quarter of a century. Three of these men, whom we honored and respected for their unselfish devotion to the interests of agriculture and this Society, have passed away during the last year, and we one and all will miss their presence and counsel, their wisdom and foresight, in the management of this Society in the future. The President in his address has paid each of them a well-earned and merited tribute for their zeal and devotion to the welfare and prosperity of this Society. We mourn their loss as friends and good citizens.

The preliminary work of getting up an exhibition is laborious and almost endless in detail. When a casual observer sees the goods arranged and classified on the grounds during the days of the exhibition, it seldom strikes him, nor does he give it a thought, the amount of hard work, good judgment, constant attention to minor details there is before the gates are opened to admit visitors. To become a member of the Executive Committee means hard work for months before the fair, and aggravation, annoyances and censure for months after it is over. Any man who thinks to hold such a position and not have anything to do, will change his opinion after one year's experience on this Committee. To attempt to enumerate the work would mean writing a long catalogue, with as many pages to each department as there are departments in our schedule of premiums, and even then one could not do the subject justice. I will say, however, that all the preliminary work has been faithfully performed, and, further,

that from a point of economy, our expense account will stand competition with any other State society in this country, while our system and classification of the goods, products and stock on the grounds is looked upon as a model by other State societies. Our exhibition of fruit and vegetables is by far the best held by any of the Middle or Eastern States.

By the opening day of the last fair, the preparatory work was about finished, and all the department superintendents ready to receive goods and put them in position. The weather was all that the managers could desire, and continued so through the week. The departments were all better filled than in former years, with the exception of Jersey cattle. These were light, owing to the fact of a scare about that time that pleuro-pneumonia had again broken out in our State, which false report kept many of our best breeders away from our grounds. Their absence was a sore disappointment to many visitors, who came long distances to see the best exhibition of Jersey cattle held in any State in this country.

The exhibit of neat cattle compares well in the different classes (except Jerseys, which it will be found were poorly represented, owing to the scare occasioned by fear of pleuro-pneumonia,) with the exhibit of any previous year.

The table given below will show the number of herds shown for State premiums, and the number of animals of each breed entered for State and Society premiums.

SPECIAL STATE PREMIUMS.

HERDS.

Jerseys.....2	Ayrshire.....3	Guernseys.....2
Holsteins.....2	Short Horns.....2	Grades.....2

SINGLE ANIMALS.

State Premiums.			Society Premiums.		
Jerseys.....	Bulls, 3	Cows, 6	Jerseys.....	Bulls, 18	Cows, 14
Holsteins.....	" 3	" 6	Holsteins.....	" 13	" 17
Ayrshires.....	" 2	" 4	Ayrshires.....	" 11	" 18
Guernseys.....	" 3	" 4	Guernseys.....	" 5	" 12
Short Horns.....	" 2	" 5	Short Horns....	" 3	" 8
Herefords.....	" 1	" 1	Devons.....	" 1	" 3
Devons.....	" 1	" 1	Swiss.....	" 2	" 5
Grades.....	" 7		Grades.....	" 26	

The total number of herds shown being thirteen, making sixty-five head added to the total number of single animals, show there was exhibited 237 head of blooded stock and thirty-three grades, making a total of 270 head of neat cattle.

The exhibit of sheep and swine was of a higher and better quality than that shown in former years, an entry fee of fifty cents being charged on each animal entered. Instead of decreasing the exhibit, as was thought would be the result, the number of entries this year was larger than ever, and the class of animals of a much better quality. The tables following give the number and breed of animals entered for State and Society premiums.

SHEEP.

State Premiums.				Society Premiums.			
Southdowns...	Ewes, 9	Rams, 4		Southdowns....	Ewes, 30	Rams, 12	
Leicesters.....	" 6	" 3		Leicesters.....	" 21	" 5	
Cotswolds.....	" 3	" 2		Cotswolds.....	" 18	" 6	
Hampshiredowns	" 3	" 1		Hampshired'ns	" 21	" 9	
Oxforddowns.....	" 3	" 1		Oxforddowns...	" 9	" 4	
Merinoes.....	" 3	" 2		Merinoes.....	" 9	" 2	
Lincolns.....	" 3	" 1					
	<hr/>	<hr/>			<hr/>	<hr/>	
	30	14			108	38	

SWINE.

State Premiums.				Society Premiums.			
Jersey Reds.....	Boars, 3			Jersey Reds.....	Boars, 8	Sows, 21	
Poland Chinas.....	" 6			Poland Chinas...	" 11	" 9	
Berkshires.....	" 3			Berkshires.....	" 4	" 9	
Chester Whites.....	" 3			Chester Whites..	" 5	" 4	
Yorkshires.....	" 2			Yorkshires.....	" 3	" 5	
Essex.....	" 1			Essex.....	" 2	" 4	
	<hr/>	<hr/>			<hr/>	<hr/>	
	18				33	52	

In these three departments we have 170 head of neat cattle, 168 of ewes and rams and 103 sows and boars, making a total in the three departments, not counting the lambs and young pigs, of 441, which in numbers exceed any previous exhibition held by our Society.

The horse department was up to its usual high standard in breeding and work animals, and the speed department was managed with skill and ability. The races were started promptly, which gave satisfaction to the visitors, as well as the directors. In fact the superintendents of each department discharged their duties in a business-like way, which

was approved by the directors and exhibitors. There is always more or less dissatisfaction on the part of exhibitors, especially those who do not get premiums, but the past year there was less than usual from this source. One of the most trying and difficult tasks the officers of the Society have to deal with is to get competent judges to serve in the different departments. Many of these come from long distances, pay their own expenses, and put in a hard day's work for the love of doing it, and the only compensation they receive is an admission to the grounds and a free lunch. With the increase in the size of the departments, which entails more labor on the judges, the time is now at hand when the Society will have to act more liberally with its judges, and at least pay their railroad fare, when coming from distant parts of the State. The competency, ability and knowledge of the judges is of the greatest importance to the success of our Society, and only men of the highest standing should be selected for this duty. When an award is once made, there should be no grounds on the part of the exhibitors to find fault.

Before closing this brief summary I desire to call special attention to the splendid exhibition of farm, orchard and garden products made at our last fair by Monmouth county. It would have done credit to any county or any section of this vast country, both in quantity and superior excellence of the produce. This county exhibition was looked upon with wonder and admiration by thousands of visitors. It would be an attractive and interesting feature if each county in the State would make a similar exhibition of their products. It would do more than anything else to attract settlers to our State, in sections, too, where the land is both fertile and low priced, where comfortable homes could be made in close proximity to schools, churches and home markets.

Our Society should take early and earnest measures to encourage the planting of forest trees on our naked hill-sides and uncultivated lands. Our forests are and have been ruthlessly destroyed for years, and no measures taken to replace them, the destruction of which is seriously detrimental to our agricultural pursuits. We should offer liberal premiums for tree-planting on a large scale, and endeavor by other means to get large property owners interested in setting out young trees as a source of profit. There are thousands of acres of land now lying waste which, if planted, would pay a handsome profit on the outlay. But I have now exceeded my time and must draw

my report to a close, with the earnest hope that our Society will move along smoothly, progressively, and that the results will be marked with success in putting in practice and popularizing enlightened systems of agriculture, the outgrowth of which will make us a prosperous, contented and happy people.

January 21st, 1885.

P. T. QUINN,
Cor. Sec'y.

TREASURER'S ANNUAL STATEMENT.

ELIZABETH, N. J., January 14th, 1885.

WILLIAM A. CLARK, *Treasurer,*

In account with NEW JERSEY STATE AGRICULTURAL SOCIETY,
from January 16th, 1884, to January 1st, 1885.

RECEIPTS.

GENERAL ACCOUNT.

Cash received from	Executive Committee.....	\$500 00	
"	" " Rent of Tent.....	40 00	
"	" " Auditing Committee.....	200 00	
"	" " Mutual Driving Association.....	600 00	
"	" " Waverley Driving Association....	250 00	
"	" " Track Tickets, 83-84.....	68 00	
"	" " Rents, Grounds.....	200 00	
"	" " " Stands.....	13 00	
"	" " " Stalls.....	67 25	
"	" " Pasturing Sheep.....	30 00	
"	" " Estate of P. Jones.....	1,120 00	
		<hr/>	\$3,088 25

FAIR ACCOUNT.

Cash received from	Gate Admissions.....	\$11,272 69	
"	" " Grand Stand.....	814 00	
"	" " Special Privileges.....	2,025 00	
"	" " Stand Rents.....	4,642 00	
"	" " Railroad Admissions.....	6,440 94	
"	" " Speed Entries.....	2,080 00	
"	" " " Cards.....	62 45	
"	" " Society Entries.....	768 50	
		<hr/>	28,105 58
			<hr/>
			\$31,193 88

DISBURSEMENTS.

GROUND ACCOUNT.

Cash paid for Haying.....	\$67 57	
" " Agricultural Implements.....	42 58	
" " Overseer of Grounds.....	581 88	
" " Help to Overseer.....	192 80	
" " Stable Account.....	196 99	
		<u>\$1,081 77</u>

GENERAL ACCOUNT.

Cash paid for Account Fair 1888.....	\$163 20	
" " Office Rent.....	75 00	
" " Interest.....	60 00	
" " Insurance.....	146 19	
" " Taxes.....	210 00	
" " Premium, Mutual Benefit Life.....	76 40	
" " Treasurer's Office Expense.....	74 65	
" " Secretary's Office Expense.....	187 47	
" " Directors' Dinner.....	169 01	
" " Salaries.....	1,500 00	
" " N. T. Association Membership.....	56 00	
" " As per Sundry Resolutions.....	506 78	
		<u>3,174 65</u>

IMPROVEMENT ACCOUNT.

Cash paid for New Buildings, Stalls, Steam Pump, &c..	\$4,880 99	
" " Labor and Materials for Repairs to Buildings.....	416 12	
" " Whitewashing.....	75 00	
		<u>5,372 11</u>

FAIR ACCOUNT.

Cash paid for Help and Expenses.....	\$498 89	
" " Supplies Bought for Fair.....	268 52	
" " Judges, Superintendent and Help..	1,015 25	
" " Advertising.....	454 89	
" " Printing, Stationery and Tickets.....	606 25	
" " Posting Bills.....	170 66	
" " Press Entertainment.....	127 00	
" " Refectory at Fair.....	410 52	
" " Band.....	163 00	
" " Stand Account.....	200 00	
" " Police and Watchmen.....	417 88	
" " Recording Secretary's Fair Expenses...	72 60	
" " Treasurer's Office, Ticket and Gate Ex- penses.....	319 27	
		<u>4,719 73</u>

PREMIUM ACCOUNT.

Cash paid for Speed Premiums.....	\$3,505 00
“ “ Dept. A, “	658 00
“ “ “ B, “	2,460 50
“ “ “ C, “	765 50
“ “ “ D, “	241 00
“ “ “ E, “	120 50
“ “ “ F, “	201 00
“ “ “ K, “	125 00
“ “ “ M, “	30 00
“ “ Diplomas, Medals, &c	427 50

STATE PREMIUM ACCOUNT.

To Cash paid for State Premiums	\$3,255 00
By Cash from State of New Jersey.....	3,000 00
	<hr/>
	255 00
	<hr/>
	\$8,784 00

DIVIDEND ACCOUNT.

Cash paid for Account Dividend of 1883.....	\$35 00
“ “ “ “ “ 1884.....	7,148 00
	<hr/>
	7,183 00
	<hr/>
	\$30,265 26
Balance.	928 57
	<hr/>
	\$31,193 88

WILLIAM A. CLARK,
Treasurer.

SPECIAL STATE PREMIUMS, 1884.

The following list comprises the awards in the Special State Classes, at the twenty-sixth annual fair of the State Agricultural Society, held at Waverley Park, September 15th to 19th, 1884:

HORSES.

	First Premium.	Second Premium.
S. F. Blanchard, Newark.		
Brood mare “Laura B.,” with two colts.....	\$100 00	
Matthew Suttle, 97 Broadway, Paterson.		
Brood mare “Kate Suttle,” with two colts.....		\$50 00
A. V. Sargeant, Newark.		
Stallion “Charlie B.,” 4 years or over.....	100 00	
R. Cadugan, Bayonne, N. J.		
Stallion “Bayonne Prince,” 4 years and over.....		50 00

	First Premium	Second Premium.
George Stengle, Newark.		
Stallion "Ozone," 3 years old.....		\$40 00
R. Cadugan, Bayonne, N. J.		
Stallion "Valdine," 3 years old.....	\$75 00	
James Dunn, Roseville avenue, Newark.		
Percheron stallion "Domestic".....	75 00	
H. E. Seward, Willswood Farm, Budd's Lake.		
Two-year-old stallion, for all work, "Duke of Wills- wood".....	40 00	
R. Cadugan, Bayonne.		
Stallion "Four Aces," 2 years old.....	50 00	
Dr. A. Trimmer, Hackettstown.		
Stallion "Hamilton's Mambrino," 2 years old.....	25 00	

CATTLE.

Nathan Robins, Metuchen.		
Herd of Jerseys.....	100 00	
F. M. Carryl, Avondale.		
Herd of Jerseys.....		50 00
Nathan Robins, Metuchen.		
Jersey bull "Jack May".....	50 00	
F. M. Carryl, Avondale.		
Jersey bull "Trailer".....		25 00
D. A. Vandever, Freehold.		
Jersey cow "Queen of Powhatcong".....	50 00	
Nathan Robins, Metuchen.		
Jersey cow "Violet Girl".....		25 00
R. Thatcher & Sons, Flemington.		
Herd of short horns.....	100 00	
J. T. Fields, Red Bank.		
Herd of short horns.....		50 00
Short horn bull "2d Duke of Onondago".....	50 00	
R. Thatcher & Sons, Flemington.		
Short horn bull "Welcome Lad".....		25 00
Short horn cow "Lady Alice 6th".....		25 00
Short horn cow "Lady Alice 2d".....	50 00	
Brunswick Stock Farm, Elizabeth.		
Herd of Guernseys.....	100 00	
George Lamonte, Bound Brook.		
Herd of Guernseys.....		50 00
Burnside Stock Farm, Elizabeth.		
Guernsey bull "Oscar".....	50 00	
George Lamonte, Bound Brook.		
Guernsey bull "Mark Tapley".....		25 00

	First Premium.	Second Premium.
Burnside Stock Farm, Elizabeth.		
Guernsey cow "Bernice 2d".....	\$50 00	
George Lamonte, Bound Brook.		
Guernsey cow "Lily Gareif".....		\$25 00
James Neilson, New Brunswick.		
Herd of Holsteins.....	100 00	
James Neilson, New Brunswick.		
Holstein bull "Clarion".....	50 00	
E. T. Benedict, Montclair.		
Holstein bull "Lord Nelson".....		25 00
Chas. E. Conover, Wickatunk.		
Holstein cow "Aagie Elsie".....	50 00	
D. H. McAlpin, Morris Plains.		
Holstein cow "Jennie V.".....		25 00
J. O. Magie, Elizabeth.		
Herd of Ayrshires.....	100 00	
J. O. Magie & Sons, Elizabeth.		
Herd of Ayrshires.....		50 00
J. L. Benedict, Elizabeth.		
Ayrshire bull "Earl of Hudson".....	50 00	
J. O. Magie & Sons, Elizabeth.		
Ayrshire bull "Lancer 11th".....		25 00
Burnside Stock Farm, Elizabeth.		
Ayrshire cow "Queen of Avon".....	50 00	
J. O. Magie & Sons, Elizabeth.		
Ayrshire cow "Dolly Gray".....		25 00
Risdon Hankinson, Mount Holly.		
Devon bull "Wonder".....	50 00	
Devon cow "Ella Rhea".....	50 00	
John Crane, Morris.		
Hereford bull "John Brown".....	50 00	
Hereford cow.....	50 00	
J. L. Benedict, Elizabeth.		
Herd of Grades.....	100 00	
R. Thatcher & Sons, Flemington.		
Herd of Grades.....		50 00
J. L. Benedict, Elizabeth.		
Grade cow "No. 2," 2 years and over.....	50 00	
Dr. D. M. Forman, Freehold.		
Grade cow "No. 2," 2 years and over.....		25 00
Geo. Lamonte, Bound Brook.		
Grade cow, over 2 years.....	50 00	
Geo. Lamonte, Bound Brook.		
Grade cow, under 2 years.....		25 00

SHEEP.

	First Premium.	Second Premium.
Jeremiah McCain, Mount Hermon.		
Cotswold ram.....	\$20 00	
Benj. Hulse, Allentown.		
Cotswold ram.....		\$15 00
J. McCain, Mount Hermon.		
Pen of Cotswolds.....	20 00	
R. Thatcher & Sons, Flemington.		
Leicester ram "Shakespeare".....	20 00	
R. Thatcher & Sons, Flemington.		
Leicester ram "Billy Button".....		15 00
J. McCain, Mount Hermon.		
Pen of Leicesters.....		15 00
R. Thatcher & Sons, Flemington.		
Pen of Leicesters	20 00	
Benj. Hulse, Allentown.		
Southdown ram.....	20 00	
J. McCain, Mount Hermon.		
Southdown ram.....		15 00
Pen of Southdowns.....	20 00	
Chas. R. Hoff, Centreville.		
Pen of Southdowns.....		15 00
J. McCain, Mount Hermon.		
Oxforddown ram.....	20 00	
Wm. C. Addis, Delaware, N. J.		
Oxforddown ram		15 00
J. McCain, Mount Hermon.		
Pen of Oxforddowns.. ..	20 00	
Benj. Hulse, Allentown.		
Hampshiredown ram.....	20 00	
Pen of Hampshiredowns.....	20 00	
J. McCain, Mount Hermon.		
Merino ram.....	20 00	
Benj. Hulse, Allentown.		
Merino ram.....		15 00
Pen of Merinoes.....	20 00	
William Lindsay, Elizabeth.		
Pen of Lincoln ewes.....		15 00

SWINE.

	First Premium.	Second Premium
E. Thatcher & Sons, Flemington.		
Berkshire boar, "Old Hunterdon," Sweepstakes pre- mium	\$25 00	
Chas. R. Hoff, Centreville, N. J.		
Poland China boar, sweepstake for boar of any breed		\$15 00
John R. Sickles, Marlboro.		
Poland China boar, 1 year and over	20 00	
Wm. H. DuBois, Marlboro.		
Poland China boar, 1 year and over		15 00
James Neilson, New Brunswick.		
Berkshire boar, "Royal Oxford"	20 00	
R. Thatcher & Sons, Flemington.		
Berkshire boar		15 00
Wm. C. Addis, Delaware, N. J.		
Jersey Red boar	20 00	
John R. Sickles, Marlboro.		
Jersey Red boar		15 00
Wm. Probasco, Flemington.		
Chester White boar	20 00	
Rowan & Simonson, Bradevelt.		
Chester White boar		15 00
Jeremiah McCain, Mt. Hermon.		
Yorkshire boar	20 00	
Benjamin Hulse, Allentown.		
Yorkshire boar		15 00
Essex boar	20 00	

POULTRY.

Chas. A. Reid, Englishtown.		
Display of poultry	80 00	
Westervelt, Haywood & Co., Rutherford.		
Display of poultry		15 00

SILK.

Virion Des Lauriens & Co., 1206 3d avenue, New York.		
Reeled silk	25 00	
Exhibit of cocoons	20 00	
P. T. Wood, New Providence.		
Exhibit manufactured silk goods	25 00	
Reeled silk		15 00
Chas. L. Lum, 11 Union, Elizabeth.		
Silk cocoons	15 00	

FARM PRODUCTS.

WINTER PREMIUMS, 1884.

James H. Baird, Marlboro,	
Five acres rye, 85½ bushels per acre, 17,905 lbs. straw.....	\$25 00
Henry Campbell, Freehold,	
Five acres wheat, 46½ bushels per acre.....	25 00
J. H. Denise, Freehold,	
Five acres wheat, 44½ bushels per acre.....	15 00
Morris Bacon, Cumberland county,	
Five acres wheat, 41 bushels per acre.....	—
Henry Campbell, Freehold,	
One acre potatoes, 186 barrels.....	25 00
Henry Campbell, Freehold,	
One acre apples, 288 barrels.....	30 00
J. H. Willey, Keyport,	
One acre grapes, 14,128 lbs.....	30 00
D. Aug. Vanderveer, Keyport,	
One acre grapes, 14,008 lbs.....	15 00
R. Thatcher & Son, Flemington,	
One acre peaches, 392 baskets.....	30 00
J. W. Corey, Westfield,	
One acre corn, for ensilage, 21½ tons.....	25 00
L. DuBois, Manalapan,	
One-quarter acre tomatoes, 182 crates.....	15 00
D. Aug. Vanderveer, Manalapan,	
Five acres Timothy hay, 18½ tons.....	25 00
J. H. Denise, Freehold,	
Five acres Timothy hay, 15½ tons.....	15 00
J. H. Denise, Freehold,	
Five acres corn, 485 bushels, 97 bushels per acre.....	25 00
J. Errickson, Camden county,	
One acre strawberries, 7,267 quarts, sold for \$736.47.....	30 00
John H. Cooper, Pompton,	
One-quarter acre onions, 164 bushels.....	15 00
Reuben Hankinson, Mount Holly,	
Dairy product, 10 cows: cream, 1,060 quarts, sold for \$212;	
2,810 pounds butter, \$1,133.50; total, \$1,345.50.....	100 00
	<hr/>
	\$445 00

WILLIAM M. FORCE,

Secretary of State Premium Committee.

NEW JERSEY

State Horticultural Society.

REPORT FOR THE YEAR 1884.

STATE HORTICULTURAL SOCIETY.

OFFICERS FOR 1885.

PRESIDENT.

THO. F. BAKER.....Bridgeton.....Cumberland county.

VICE PRESIDENTS.

WM. F. BASSETT.....	Hammonton.....	Atlantic county.
E. S. CARMAN.....	River Edge.....	Bergen county.
GEO. W. ROGERS.....	Mt. Holly.....	Burlington county.
SAMUEL A. BACON.....	Haddonfield.....	Camden county.
J. D. COLE.....	Deerfield.....	Cumberland county.
JOSEPH B. WARD.....	Newark.....	Essex county.
JOHN REPP.....	Glassboro.....	Gloucester county.
C. W. IDELL.....	Hoboken.....	Hudson county.
E. M. HEATH.....	Locktown.....	Hunterdon county.
EDWIN ALLEN.....	New Brunswick.....	Middlesex county.
CHARLES BLACK.....	Hightstown.....	Mercer county.
JOHN S. GREEN.....	Morristown.....	Morris county.
D. A. VANDEVEER.....	Manalapan.....	Monmouth county.
JESSE BATTY.....	Manchester.....	Ocean county.
GEO. C. WOOLSEY.....	Passaic.....	Passaic county.
RUFUS W. SMITH.....	Elmer.....	Salem county.
D. C. VOORHEES.....	Blawenburgh.....	Somerset county.
E. P. BEEBE.....	Elizabeth.....	Union county.

RECORDING SECRETARY.

E. WILLIAMS.....Montclair.....Essex county.

CORRESPONDING SECRETARY.

J. T. LOVETT.....Little Silver.....Monmouth county.

TREASURER.

CHARLES L. JONES.....Newark.....Essex county.

EXECUTIVE COMMITTEE.

WM. R. WARD.....	Newark.....	Essex county.
C. W. IDELL.....	Hoboken.....	Hudson county.
JOHN PARRY.....	Parry.....	Burlington county.
E. P. BEEBE.....	Elizabeth.....	Union county.
JOHN C. VAN DOREN.....	Manalapan.....	Monmouth county.

FRUIT COMMITTEE.

J. B. ROGERS.....	Milburn.....	Essex count
WM. H. GOLDSMITH.....	Newark.....	Essex county.
CHARLES BLACK.....	Hightstown.....	Mercer county.
ELI MINCH.....	Shiloh.....	Cumberland county.
A. W. PEARSON.....	Vineland.....	Cumberland county.

FLOWER COMMITTEE.

THOMAS EDWARDS.....	Bridgeton.....	Cumberland county.
GEO. C. WOOLSON.....	Passaic.....	Passaic county.
CHARLES B. HORNER.....	Mt. Holly.....	Burlington county.

VEGETABLE COMMITTEE.

JOSEPH B. WARD.....	Newark.....	Essex county.
FRANKLIN DYE.....	Trenton.....	Mercer county.
S. C. DE COU.....	Moorestown.....	Burlington county.

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STATE HORTICULTURAL SOCIETY.

The tenth annual meeting of the New Jersey State Horticultural Society was held at the Surpeme Court room, in the State House, at Trenton, on the 29th and 30th days of December, 1884, at the invitation of the Mercer County Board of Agriculture.

The attendance was good, considering that its sessions were held during holiday week. The time had to be fixed thus early in the winter on account of several members wishing to attend the meeting of the Mississippi Valley Horticultural Society and the Exposition at New Orleans, in January, 1885.

Mr. Ralph Ege, President of the Mercer County Board of Agriculture, in welcoming the State Horticultural Society to Mercer county, said, among other things, in referring to Mercer county: "While we have a soil peculiarly adapted to the production of the cereals, and can boast of having produced the present year more than one hundred bushels of corn and nearly fifty bushels of wheat to the acre (the former without manure and with light application of lime only), yet with the prospect of low prices for these products ruling for years to come, we must turn our attention to the cultivation of the more perishable fruits and vegetables if we would pursue our vocation with profit and avoid competition with the cheap and easily-tilled lands of the great West, which is pouring its cheap grain in upon us in such vast quantities that Eastern farmers are enabled to purchase bakers' bread delivered at their doors cheaper than they can produce it.

"With this truth forcing itself upon us, we are yearly turning our attention more to the production of vegetables and the more perishable of the fruits; but to many of us it is like a leap in the dark, and we must look to you at this time, my brother horticulturists, for light, for counsel and wisdom to guide and direct us in our efforts and researches after a more thorough and improved system, and that we profit by your experience and investigations and be enabled more successfully to resist the attacks of our common enemies, the insects,

which so frequently devastate our orchards and gardens, and rob us of the fruits of our labors. There is no State in the Union so favorably located in all respects as New Jersey. Climate, soil and markets all contribute to make her the very paradise of the horticulturist, and her advance in this science has been so rapid in the last twenty years that persons passing over our lines of railroads and viewing our gardens, orchards and vineyards, regard our progress with wonder and astonishment."

Who can deny the force of these remarks of Mr. Ege, quoted above? They contain the key-note of the change rapidly taking place in the cultivation of the soil in this State. New Jersey now bears the proud designation of the "Garden State." This being so, horticulture must have a strong claim upon the attention of her citizens. One of the greatest sources of profit arising from the tilling of her soil is now from her vegetables and fruits. Can every raiser of these in this State truly say of himself, "I am doing all I can to advance these interests." If you cannot, why not put your shoulder to the wheel and identify yourself with a Society the object of which is the advancement of these interests?

President Baker, of the Horticultural Society, briefly responded to Mr. Ege. Next in order came the report of Secretary Williams. He called particular attention to the value of the county fruit lists, the Society having, in 1884, adopted the system of making special reports of the fruits of the several counties, this being rendered necessary from the diversified soils, climates and surroundings of the several sections of the State. The experience of the first year conclusively shows the wisdom of this arrangement.

The number of delegates attending from farmers' clubs, granges and kindred societies numbered forty-three—a larger delegation than ever before—tending to show an increased interest in the welfare of the Society.

J. B. Rogers then read a paper entitled "Cultivation, as affecting the vegetative and reproductive organs of the strawberry," which will be published in full in the Horticultural Report. Following the reading of this paper, a discussion was had.

Mr. Carhart inquired the amount of potash it was best to use to the acre.

Mr. Rogers.—That depends on the strength; from 500 to 700 pounds, actual potash.

Mr. Hale, in his paper on the strawberry, read before this Society a few years ago, recommended from 1,200 to 2,500 pounds of a mixture, three parts bone, one part potash and one part fish.

Mr. White inquired if the Manchester required any special manure different from another.

Mr. Ege thought on loamy soil any ordinary manure would be equally beneficial; the light soils of Southern Jersey were most generally deficient in potash. This should be applied in winter, while the plants were dormant, and as it became dissolved the plants could hold it in store to be used in the fruit season. The effect was quite as much mechanical as otherwise.

The May King and Parry, new varieties, were inquired about.

Mr. Rogers said the Parry was of good size and vigorous growth on the grounds of the originator.

Mr. Joel Horner commended Atlantic, Prince of Berries and Miner's Prolific.

Mr. C. L. Jones considered bone and potash manures excellent for growth of plants; his, thus treated, were better than adjoining rows.

Mr. De Cou found the Atlantic and Prince did not do as well with him as Indiana. Old Iron Clad was also a fine berry, and sells with the best. Vick was not as large as the Indiana but was one of the finest growing plants, being of the deepest green; the size of the fruit, however, was small and unsatisfactory. The Parry, on the grounds of the originator, he thought full as good as Jersey Queen, its parent. The May King was very early, and he thought promising, originating with Thomas G. Zane, Chews Landing, New Jersey. The Secretary considered the Jersey Queen and Prince as the two very best varieties Mr. Durand had ever introduced. The former was somewhat acid, but a large, handsome and very attractive berry, and thus far had done well with him. The Prince, first exhibited at the exhibition of this Society, in Newark, was then pronounced by the judges the best in quality, and took the prize. It was then called Superb. He indorsed the action of the judges at that time. It promises well. The Atlantic, Mrs. Garfield and Daniel Boone so far promised well.

Mr. Carhart thought Kentucky the best late variety.

Mr. Burrough liked Miner's and Bidwell; the Kentucky and Sharpless seemed to improve on acquaintance. Big Bob was a failure.

Mr. De Cou.—The true Big Bob was not so bad a berry as some would have us believe. The trouble was that when first sent out it

was badly mixed ; his first supply of plants were of this kind, which gave him a poor opinion of it, but since he had separated the Big Bob from the little bobs, he thought better of it. It was full as good as Jersey Queen with him.

Mr. Burrough.—This probably accounts for my failure ; I must have got the little kind.

James Lippencott spoke favorably of the Old Iron Clad.

President Baker said the Manchester gave a large yield of remarkably average large berries and returned more money than any other kind he had. Jersey Queen were also good. Sharpless had also been very profitable, but the dry weather the past season used it up. Miner's did not ripen well.

Mr. Jones asked for experience with Gipsey ; with him it had proved a superior berry.

President Baker said it ripened five days ahead of any other with him and he wanted more.

Mr. Grant had tried many of the highly praised varieties ; he could grow ten quarts of Wilson to one of any other, and if he had stuck to the Wilson he would have been several thousand dollars better off. Kentucky was the best late berry for profit.

Mr. Wilcox mentioned two brothers with adjoining farms, one of which found the Crescent the best for profit, the other the Wilson.

Mr. Idell said the Crescent was not only the best looking, but the best eating berry of the two.

Mr. Bray thought the demand for plants was a pretty good indication of the value of the variety. He sold 1,000 plants of the Wilson to 100 of others.

The Secretary asked if his trade was local. The reply was, yes. The Secretary resuming, "This goes to prove the wisdom of our fruit lists, and this discussion is just a waste of time ; if it was to continue all day it would not convince the people of Essex county that the Wilson was a good berry for them to plant. A glance at the fruit list shows the Wilson to be popular for market in all the counties represented, except Essex and Union, where we have learned to grow better and more profitable sorts. The speakers should bear in mind that the question was experience with the new varieties. Among these latter, a coming one was the Jewell, a seedling of Jersey Queen, raised by P. M. Augur, of Connecticut, the State Pomologist. He brought to my place, the 3d day of July last, a sample of berries

picked the day previous, that we sampled for dinner and pronounced No. 1 for quality and size, especially as they had been in picking order since June 18th. Whether they will do as well elsewhere remains to be seen. I have a few plants on trial, and for vigor of growth and robust foliage they exceed even the Sharpless, or anything I have. If the coming season is favorable, those of you who are interested will do well to look after this, whether you get an invitation or not."

Mr. Jones had similar experience with it. Plants set in April bore berries equal in size to Prince, on plants set the previous August.

Mr. De Cou.—The old varieties have established reputations, and our aim is to find, if possible, among the new ones, those that are as good, or better. I would like to inquire if any one knows anything about the Henderson.

The Secretary presumed that all any one knew about it was the illustration and description that had appeared in the public prints.

The President's address followed in order.

This was followed by three papers on "The Best and Most Profitable Peaches for Central New Jersey." These cannot be set forth in full, only abstracts given. Mr. Ralph Ege, of Hopewell, New Jersey, in a very valuable and interesting essay, presented the location, aspect and selection of soils and sites for peaches, also the cultivation, pruning, &c., of the trees.

The list of varieties recommended by him is, Mountain Rose, Moore's Favorite, Oldmixon, Mountain Rareripe, Steavens' Rareripe, Stump the World, Red Cheek, Melocoton, Late Crawford, Keyport White, which peach is known in portions of Hunterdon and Somerset counties as Wykoff's White and Bray's Rareripe.

Mr. Ege gives full descriptions of each of these varieties, also many hints and much information concerning the shipping qualities of these several varieties, of which he is fully competent, having had years' experience in large and profitable orchards.

Mr. J. D. Cole, of Deerfield, New Jersey, in a paper on the same subject, says: "The time of ripening, bearing qualities and length of time different varieties will live varies. As to time of ripening, the later varieties have the preference. The bearing qualities must be good, or the profit will be lost. Most of the early peaches originating in America are short-lived. Some of the late ones have the same fault, yet as a rule they live longer than the early ones."

His list of varieties is, Mountain Rose, Batten's Favorite, Oldmixon Freestone, Heath Freestone, Stump the World, Cook's Seedling, Crawford Late, Fox's Seedling, Ward Late Free; on sandy land, Salway.

Mr. R. D. Cole, Bridgeton, N. J., in a paper, names for early, Early Rivers as the best early peach, Mountain Rose, Oldmixon Free, Moore's Favorite, Late Crawford, Fox's Seedling, Bay View Free. He also mentions Miller's Peach, a late white variety, one to two weeks later, larger and resembling Fox's Seedling. Recommends planting not over six to eight varieties where marketing the crop is object.

New varieties of peaches was the next question discussed.

Mr. Blackwell said the Brandywine was the best yellow peach he knew of. Mountain Rose and Moore's Favorite were the best of their season.

Mr. William R. Ward agreed with former speakers, that for market purposes few varieties were desirable, and but one kind ripening at the same time. The newer varieties should be planted experimentally, and for family use to furnish a continuous supply.

Mr. Grant said the Mountain Rose was a good peach for Southern Jersey, but not profitable for market. He knew an orchard of Crawford's Late, on high, cold, gravelly soil, that only yielded fifty baskets to 1,000 trees, while a few trees on low wet ground bore abundantly.

Mr. Parry commended Ford's Late, a late white peach of excellent quality.

Mr. Burt coincided.

The Secretary said he saw at the Mount Holly fair, October 8th, baskets of Ford's Late and Camden, both white peaches of equal merit in looks and size, and sampled them freely. In quality, sometimes one would be ahead, sometimes the other, the decision seeming to hinge on the degree of ripeness when tested. Both these, as shown, were decidedly fine varieties so late in the season, hence their value.

Mr. Idell called attention to the fact that fancy white peaches would sell while fresh at fancy prices, while the same quality of fruit dried would hardly sell at all.

Mr. White named Stump the World, Oldmixon Free, Crawford's Late and Steavens' Rareripec as four of the best peaches for shipment, and Crawford's Late as the best yellow peach he knew of.

Mr. Voorhees commended Reeves' Favorite or Red Neck.

Mr. Blackwell did not want another tree of Reeves' Favorite.

Mr. Heath said they were good, but shy bearers. Reeves' Favorite or Red Neck, as popularly called, and Morris County Rareripe were popular in Hunterdon.

Mr. Ege asked for the best manures for the peach, and for the means of preventing the premature ripening of the fruit?

Mr. Baird.—This difficulty appears some seasons and not others. Muriate of potash and phosphates were good fertilizers.

Mr. Beebe had trees on rich ground that were unfruitful; on poor ground with plenty of potash and phosphates they did well.

The Secretary.—Oldmixon, Mount Rose, Stump the World and Crawford's Late were old varieties, and a glance at the fruit list would show that they were quoted for family and market use in almost every county, so that all discussions on them here would not alter their status. Among the new varieties he saw the past season was the Freehold, a fine orchard of which he saw on Mr. Baird's farm, in Monmouth county. He thought it a fine peach of high promise.

Mr. Baird being called upon, said, it originated with a gentleman in Freehold, who brought him buds to propagate for him. He did so, and planted the surplus himself. The past season they proved the best in his orchard; red-cheeked, white fleshed, good size, fine quality, freestones, harvested the second week in November.

The Secretary.—If the Bayview were as large as the cut represented, it was large enough.

Mr. Wilcox said it was of medium size and very productive. Waterloo, Amsden and Alexander were all very similar, and might be considered the same for all practical purposes, though some claimed the latter to be the largest.

Mr. Ege named Early Rivers as the best early peach for perfect fruit, but here and further North there was doubtless more money in Crawford's Late than any other.

Lord Palmerston, Wheatland and Allen's Late were inquired about, but elicited no experiences.

Grape rot and the past season's experience with remedies, came next.

The Secretary said he had no paper to read, yet had tried the so-called soda remedy; could not see it did the least good. Carbolic acid had been recommended in certain quarters, one of which was a report of meeting of the Summit County Horticultural Society, of Ohio, alluded to this remedy as follows: "It has been known for years that

no fungus growth can take place in the presence of carbolic acid, but to Dr. Jewett, the President of our Society, is due the credit of applying this remedy for grape rot. One ounce of carbolic acid, dissolved in five gallons of water, and sprayed over the fruit when the rot appears, will stop its further progress. This discovery, like all others in horticulture, is given as free as air, although no man can estimate its value." Now, here is a simple remedy that comes to us indorsed by practical men like ourselves. I hope that the next season many of you will not forget it, or neglect to try it. The Secretary, up to the last week in August, kept his vines quite free from mildew with flowers of sulphur. At that time the intense hot weather set in, and with a new mildew, or the same under a new form, that was of such a malignant type and spread so rapidly that he abandoned any attempt to dispute its progress as useless. His grapes were mostly bagged, and this saved them.

Mr. Brakeley thought a syringe, with what was known as the cyclone nozzle, could be effectually used to spray the foliage.

Mr. Rider mentioned little minute drops or globules, clear as crystal, that appeared on the berries, and he thought caused the rot.

Mr. Caywood was satisfied they were an efficient aid if not the cause; the spores of the rot floating about would be most likely to stick to the gummy crystals and enter the grape through them.

The Secretary did not believe in this theory. He said the floating spores lodged on the grapes and under favorable atmospheric conditions germinated, being first visible, to the naked eye, as a small brown spot, which, unless checked, would grow and enlarge till the whole grape was involved. Last season, in bagging his grapes, he found clusters showing these brown spots; he marked the bags put on these, and on their removal when the fruit matured, revealed the fact that these spots had enlarged, in some instances, to the size of buck-shot down; some grapes were entirely ruined. Instead of retaining their brown color, they had become black, and the arrest of the growth of the spots he attributed to the lack of receiving moisture. Mr. Pearson had demonstrated that a temperature below 60° would kill the growth of these spots. And his experiments this season in covering with the plow all leaves and decayed berries under the trellises, had kept the spores or seed of this fungi from arising to continue its work of destruction. He regretted very much Mr. Pearson was not present to give the results of his past season's experience in detail.

He had not observed the crystals mentioned, on the fruit, but had seen the same or similar ones on the young growing canes. When they were abundant the canes seemed checked in growth. They stood like little globules all over the young canes; they were not soft or liquid, but would roll off when touched, and suggested the idea that the saps in some way or from some cause had exuded and congealed in these little transparent globes. He had no idea they had any connection with the rot; they were more noticeable on Moore's Early; Ives and Cottage varieties nearly exempt from rot. If they were the same that the previous speakers had alluded to, he could not connect them with the rot, neither could he explain their origin.

Mr. Wilcox.—Whether the rot comes from below or above. Experiments in Vineland had shown that where a roof of boards or canvas covered the vines, rot or mildew did not prevail.

Mr. Ward said the Niagara seemed very much inclined to mildew. Mr. Williams' success was due to bagging. Mr. Goldsmith did not bag, and failed. He had no Niagaras, but his Duchesses were an entire failure, while his Concords came out all right. He never had bagged Concords. Brighton suffered from mildew, but not as bad as some others.

The Secretary bagged most everything; he couldn't get a bunch of Duchesses without bagging, and hardly then, owing to the difficulty of keeping the foliage on.

Mr. Horner's Vergennes half rotted; Lady Washington and Rogers' Hybrids suffered from mildew severely; Martha, Champion, Worden, Cottage, Janesville, Pocklington and Black Defiance were among those that were exempt.

The Secretary stated that of those with him the Cottage was iron-clad, and better, that is, sweeter than the Concord, though the clusters were not so large; Janesville he discarded a score of years ago; Champion was not worth the growing to eat; Martha mildewed and rotted badly; Lady Washington healthy in foliage, but the fruit, though larger and better than Martha, rotted very soon after it reached maturity; Vergennes mildewed so bad for two years past it had failed to ripen; Telegraph made a fine, compact cluster, and was nearly iron clad; Worden, earlier, larger and better than Concord, otherwise the same; Pocklington rotted some, and lost foliage badly from mildew; Black Defiance was among the healthiest. Indeed, he questioned if he had any grapes that would not take the mildew and rot at some

time or other. Of the new varieties, Empire State was promising well, the foliage for the two years being very healthy.

Mr. Wilcox found bags opened at the bottom as good as closed ones, and any water entering them could escape.

Mr. Beebe said the bags should be put on as soon as the grapes had formed; did not think it would pay if the fruit sold for less than ten cents per pound.

Mr. Idell, being called upon to state the market value of the Niagara, stated it took well, the clusters were large and attractive in appearance, and sold well; it pleased customers, and they wanted more, a good indication of their value, when customers would inquire for them. It was the best white grape in the New York market last fall. It met with favor by the public, which he regarded the best test.

Mr. Ward regarded Moore's Early as the best early grape before the Concord; although the leaves fall early the fruit matured perfectly and received no injury from the loss.

Mr. Horner indorsed all that had been said in favor of Moore's Early; it was as vigorous as Concord, but ten days earlier, and one pound was equal to two of Concords, as the latter sold for six cents and the Moore's Early for twelve cents a pound.

Mr. Vandever, being called on for his experience, made the following statement: The past season my Concord vineyard suffered quite badly from mildew, as did my Niagaras, Lady, Walter, Isabella and others. Some Concord vineyards in our part of the State were a complete failure from mildew and rot. I applied no remedies as I thought it too late to do so when I saw the disease. I think that if sulphur and lime are applied two or three times during the season, commencing early, and bagging will save the crop. My Concords are planted in rows running north and south, eight feet apart and seven feet in the row, trained in a fan shape, from three to five canes per vine, to a trellis five and a half feet high. I prune to two eyes, fertilize with marl dug on the farm, spreading broadcast from twenty-five to thirty tons per acre every winter, plow twice and then cultivate or harrow until the vines meet across the row. The vineyard is about twenty years old; has been in my possession eleven years; have lost two crops in that time from mildew and rot.

In 1881, yield 18,372 pounds per acre.

In 1882, yield 12,848 pounds per acre.

In 1883, yield 4 tons per acres.

In 1884, yield 14,003 pounds per acre.

Soil, clay loam.

My Niagaras are planted 9x9 feet, wires three feet six inches and five feet six inches high, trimmed on the Knittin system. Until they were attacked by mildew they made as fine a show of fruit as I ever saw, giving a very heavy yield of fine, large clusters; visitors pronounced them the finest they had ever seen. The growth of wood was very rank, reaching in many instances eighteen feet in one season. I have a very high opinion of the Niagara grape. It will be a very profitable variety to grow when not injured by mildew or rot.

At the evening session the question box was opened.

Does bagging grapes exclude the many insects that lay their eggs in the clusters?

The Secretary said that spiders found a safe harbor in the clusters, and the bags doubtless gave them a dry house to live in. He did not know what particular insects were meant by the question.

Mr. Idell.—On opening a bag of grapes, small flies were abundant.

The Secretary said these flies were always present when fermentation was taking place; almost as soon as the grapes cracked they were on hand. Where they first came from he could not say.

Mr. Minch.—The presence of these pomace or vinegar flies was an evidence of fermentation, and they would penetrate the smallest cracks or crevices to get to it. Apple pomace thrown out would soon be covered with them, and they increased by millions in an incredible short space of time.

Does not fruit deteriorate by every removal from the original stock in grafting or budding—*i. e.*, we graft from No. 1, original stock, into No. 2, into No. 3, and so on through successive generations?

The Secretary would answer no. The influence of the stock might be less in one instance and greater in another.

Mr. Baird.—The results of this process exist all around us, and improvement is quite as likely to follow as deterioration. The Bartlett pear and Baldwin apple have been subject to this process for years, and yet they retain their distinctive characteristics and are as good today as ever they were.

Is there any practical and cheap method of keeping summer and fall fruits for family or market use in winter?

Dr. Ward had no difficulty in keeping apples and pears a long time by the use of ice. Early varieties must be picked early. Ripe fruit will not keep. Few grapes like the Concord and its class will not keep long after picking by any process yet known. Catawba, Diana, Jefferson and such grapes keep better, but not as successfully as the larger fruits. Some Brightons in his house now were in good condition, while Concords and others had moulded and dropped from the stems.

The best covering to protect the frost heaving young plants, particularly strawberries, how thick and when applied?

The Secretary replied that this question was asked at the Connecticut Board of Agriculture, and answered thus: Salt hay, when it could be had, forest leaves, evergreen boughs, cut corn stalks, and earth, were all recommended. They should be put on thin and as soon as the ground is well frozen. The objection to leaves was, if too thick they would smother the plants; with evergreen boughs it was laborious to clean the ground if used to any great extent.

What is thought of the Kieffer pear now?

W. R. Ward.—From specimens on the table it is shown to be a good keeper. It begins to ripen in November. Had several lots in his ice-house since October, but two or three out of a barrel were decayed when taken to New Orleans, and notwithstanding the change in temperature of 33° in his house, to 80° in the open air in New Orleans, they were keeping very well.

Mr. Wilcox.—While not as good as some others, they have many points of excellence, one of which is they ripen from the outside, are early, handsome and productive.

Mr. Norton thought it the most profitable of any.

Mr. Idell.—They were beautiful and would meet the demand for a medium sized cooking pear for poor people. The larger and better specimens will meet with a moderate demand for their size and beauty.

Mr. Whitehead had tried the pears and felt of the market by inquiring as to their selling and the demand, and was convinced it would do to plant as a market fruit, which he did last spring, and did not lose a tree, which he thought spoke well of their hardiness. It was said to be better than the Bartlett canned; but some one disputed this, claiming the Bartlett to be the best pear grown for canning.

The Kieffer raw or cooked had gritty flesh that would forbid its competing with the Bartlett.

Mr. W. R. Ward called attention to the Kieffers and Vicars on the table. They were both ripe about the same season; the former would keep the best. The Clairgeau became discolored. Anjou never did, and had received more unjust criticism than any other pear ever did. Stearling was not a first-class pear, but it was early and ripened before the Bartlett, hence its value.

What two or three raspberries would you set for market now?

Mr. Parry named Turner, Marlboro and Cuthbert.

Mr. Repp.—Brandywine, Marlboro and Hansell.

Mr. Caywood would make the same selections.

Mr. White said the Winant was not so early as Hansell, but more profitable for him.

Mr. Idell said Highland Hardy had been profitable; it had matured a fall crop the past season which brought seventy-five cents per quart.

Mr. Norton would plant Brandywine.

Mr. Repp would plant ninety-nine out of a 100 Brandywine, and then plant one more of the same.

The floral part of the programme was now taken up. Mr. Thomas Edwards, of Bridgeton, New Jersey, read a paper on floral culture, having special reference to the culture of *Freesia Retracta Alba*, one one of the cape bulbs, being a practical paper on the culture of cape bulbs in general.

James Taplin furnished a paper entitled "A few notes on novelties," and the flower and plant business generally, for year 1884.

In regard to the new rose, the Sunset is mentioned as one which will, no doubt, keep a place as a good, useful variety, though we have yet to see the natural flowers to equal the colored plates published with the advertisement.

Among Carnations, many in produced varieties were to be had, good for amateur culture, but few useful for cut-flower trade, the only exception being that of the variety called Philadelphia.

Neither Chrysanthemums nor single-flowered varieties of Dahlias, seem to take the public taste.

Among green-house plants, the new plant, Climbing Asparagus, is far more beautiful than the finest Maiden-hair Fern, and does not wither as soon.

Mr. C. W. Idell followed with a paper on "The adornment of public grounds," treating of the grounds surrounding schools. (This is a vital question, and one of the most important of the present day.)

The fourth and last paper, by John Thorpe, entitled "The pleasures of Flowers," gives many practical hints concerning flowers and their culture.

The discussion on these papers was—

Mr. Jones gave an account of a movement inaugurated in his trade, in the city of Newark, some years ago, while he was school commissioner. They had a school building and wanted an appropriation to grade and otherwise improve the grounds, but the Board of Education had no funds to spare for that purpose. It finally got an appropriation of \$500 from the common council, a portion of which was used to erect an iron fence in front of the school. This done, the children were called together and the planting of trees and flowers about the yard, was set forth to them; they entered readily into it, formed a stock company of them one thousand strong, each one contributing ten cents, thus securing united, individual interest. With this fund the grounds were sodded, and trees and shrubs planted, under the direction of the commissioner; flower beds made, seeds sown and cared for by the children, properly directed, thus teaching and interesting them in such matters at the same time. The result was that one school after another caught the infection, and now every one in the city presents a neat and attractive appearance.

Mr. Rogers said in his school district their grounds were new and naked. Last Arbor day the teacher and scholars went to the woods, dug and planted thirty-five to forty trees in and around the grounds, at a cost of \$4.50.

He offered a resolution, to the effect that no one should be employed as teachers in the district schools of this State who could not instruct in botany. It was passed unanimously.

Mr. W. R. Ward advocated patronizing the nurseryman rather than the woods, thus helping him and getting trees. Silver and sugar maples and elms were among the best trees for this purpose, and urged the advantage of prompt action; not to await for the \$100 which they might not get, but to commence in a small way and secure the advantage of growth in the early planting as soon as possible.

In Mr. Rogers' case, the object of the teacher in going to the woods, was not solely to economize expenses, but to teach and instruct the

children at the same time, by becoming familiar with the different varieties, habits of growth, characteristics, &c., thus combining amusement with instruction.

Mr. Hutchinson recommended the Linden as a pretty shade tree, with nice, clean foliage, fine flowers from which bees would gather honey in great quantities; more than from anything else.

Mr. Heath, from a teacher's standpoint of thirty years, must commend the paper of Mr. Idell, particularly the idea of a shed where the children could play in stormy weather; it had never occurred to him before. Many of our school houses, especially in our country districts, were cold, bleak and unsightly in winter, exposed to the hot blazing sunshine of summer, unattractive and uninviting at all times. The reason why they are not brighter and more alluring, is because the people pay more care, thought and attention to the comfort and welfare of their stock than they do to that of their children. He hoped the seed planted here would spread and take root till it pervaded the whole State, and this Society could not engage in any enterprise more intimately connected with the welfare of the rising generation.

Mr. Ward.—Of late years our railroads have done much, in connection with their patrons, to embellish and render more attractive the grounds about their stations, in village and country towns, along their various lines. A pleasant change from the olden time.

Mr. Beebe deprecated the untidiness of some country and village highways. They were little else than nursing and breeding places for briars, Canada thistles and other noxious weeds. He recently rode over one of these highways when the air was full of Canada thistle seeds, and had no doubt some of these seeds had lodged on his wagon and been carried home, and he thus became an unwilling agent in disseminating this obnoxious pest. We ought to have a State law requiring land owners and local authorities to keep our highways free from such pestiferous nuisances, under a penalty of fine in case of failure.

The Secretary indorsed every word Mr. Beebe had uttered. These plague spots were not confined to the country proper, but our suburban towns and villages, populated with city people of wealth, refinement and esthetic culture, who entertain the most advanced ideas as to schools, churches, sidewalks and good roads, with a full supply of city ideas on internal (more properly infernal) improvements on

sanitary and other matters, who often harbor on their own premises plague spots of this or similar character. Within his recollection, wild carrot and ox-eye daisy were seldom seen, and were exterminated on their first appearance; now thousands and thousands of acres, and miles on miles of road, are occupied almost exclusively with them.

In passing, it might be remarked that the present law in the State of New Jersey is all-sufficient for the extermination of the Canada thistle, the fault being the non-enforcement of such statute.

Mr. Wilcox said Vineland had 200 miles of streets lined with shade-trees on each side, and twelve miles with double rows of trees on each side. The tulip tree was a great favorite, a beautiful, fast-growing tree.

Mr. Stiles named the white pine as among the most beautiful trees of our country; thorns and dogwoods among the small trees. There were more species in a single county of North Carolina than on the entire continent of Europe. There were 412 tree species in the United States. In a walk across three fields recently, near his home, he found thirty-one species.

On the morning of the second day, the chairman of the Fruit Committee presented the report of that committee.

This was followed by Dr. Joseph Ward reading the report of the Vegetable Committee. This committee asks a very pertinent question, as follows: "Just here we would ask why it is so many prosperous farmers have their own tables so poorly supplied with fresh, even decaying, vegetables and fruits?" Could they once know its comforts, and feel its advantages to the health of all the family, they would neglect their garden no more than they do their vast acres of grain. Each would have its true place, and each would return its own reward. The potatoes and pork of to-day would not give place to the pork and potatoes of to-morrow, but each vegetable in its turn would grace the table, and comfort and beauty, as well as plenty, reign in the family of the farmer.

Among the newer pears, Bliss' Abundance, Bliss' Everbearing, Rural New Yorker, Henderson's First-of-All, Dexter, and American Wonder are recommended.

The White Plume Celery is recommended for further trial.

The Eclipse Beet, the Pear Onion, and the Green-Fringed Lettuce are mentioned as worthy of notice.

These were followed by the consideration of a question of the greatest moment to the State of New Jersey, that of Peach Yellows.

Prof. S. T. Maynard, of the Massachusetts Agricultural College (this being the institution upon whose experimental grounds the question of the Peach Yellows, and remedies for the same, have been under investigation for several years), read a paper entitled "Peach Yellows, what is known of its cause, prevention and cure from scientific investigations and practical experiments"; extracts from which are as follows:

About fifteen years ago a lot of some 100 trees were planted upon a light, stony soil, sloping to the south, and protected by a heavy growth of woods on the north, about 100 rods from the orchard. For the first two years they were rather neglected, but the third season they were carefully pruned, and careful examinations made for the borers, which were destroyed when found. Soon indications of disease began to appear, and to counteract its effects, various substances were applied to the soil, in addition to careful and severe pruning and thorough cultivation.

About this time, under the direction of Dr. Goessmann, the director of the station, special fertilizers of various kinds were applied, and by repeated experiments it was found that bone and potash, with a little magnesia, gave the best results. The amount of each of these materials recommended is as follows: 400 pounds (50 pounds P. O^s.) of acid bone phosphate, 150 to 200 pounds (100 to 150 pounds potash) of muriate of potash, and 100 pounds of crude sulphate of magnesia, per acre. This should be applied in the fall, just before the ground freezes, or very early in the spring, and well worked into the soil for a space of from five to ten feet in diameter under the tree. The amount of this fertilizer used, however, should vary with different soils, and it will be found sometimes necessary to add nitrogenous matter, if the trees fail to make a satisfactory amount of wood.

The results of the use of this formula are that we now have trees that are fifteen years old that have borne five or six good crops of fruit and are now apparently in perfect health, although many of them have shown unmistakable signs of the disease, and recovered from it. Forms of the disease known as the yellows are two. The first, a very active form, which often attacks trees that have been injured by the cold, after seasons of late growth, and requires but a few days in which to destroy the entire tree, except the roots, which often remain alive for a long time after the top is dead. The second form, which is the

most common, is indicated by a yellowish, sickly look during the entire growing season, and the premature ripening of the fruit. The fruit is always unusually high colored, sometimes the flesh is blood red, and its brilliant color reminds one of the hectic flush on the cheek of the consumptive. There is also often a very unpleasant flavor to the fruit.

When the tissues of the trees become weakened from any cause, the proper conditions are produced and the germs producing the yellows, everywhere found, begin to develop, resulting in the destruction of the tree. Among the causes that may produce a weakened condition, are, first, a late, immature or soft growth which, upon exposure to severe cold, is so injured as to kill the tree very soon after warm weather sets in, or, if less injured, decay goes on more gradually.

Another cause is the exhaustion of the soil by the plant food being all taken up by the roots, which are gross feeders, and fermentation may result from the cells being in an inactive condition. Exhausting of the plant may also result from overbearing.

Perhaps the greatest factor in the weakening of the tissue is the peach borer.

In order to better understand the nature of this disease and its effect upon the tree, let us glance at some of the functions of the tissue of the plant. In all plants the principal part of the plant food is prepared or transformed so as to be in condition to nourish the new growing cells in the leaf. During the day time, and under the influence of light, the plant food taken in from the atmosphere and the soil, is rapidly transformed into starch in the green part of the leaf. At night, when the plant is in active growth, this starch is changed into sugar, and it is in this form taken up to nourish the growing tissue. Now, it is found in the diseased trees that there is a large quantity of starch undissolved in the tissue. In looking for a remedy for this diseased condition, we find that potash possesses the power of increasing the vigor of the leaf action of plants. The muriate of potash is generally thought to be the best. Potash alone has the effect to cause a rather late growth, and this effect must be counteracted by the use of phosphoric acid, (found in the common superphosphates, or in a less soluble form in ground bone,) which has the effect to cause an early maturity of plant tissues. The magnesia is recommended to assist in the diffusion and retention of the potash in the soil.

Prof. Maynard does not think the yellows is contagious.

The special treatment the trees have received by way of pruning has been to cut all the new wood back, each fall or winter, about one-half, and to thin out some of the weak wood entirely. To overcome the tendency of the trees to form long, straggling branches, after a time some of the main branches are cut back to stubs a few feet long. When the trees show indications of the yellows, the whole top is sometimes cut off in this manner. The effects of this annual pruning are two-fold, to keep the trees in a compact form and to reduce the number of fruit buds, thus lessening the danger from over-bearing.

Prof. Maynard devoted some time to the proper mulch, cultivation, &c., for which reference must be had to the paper, published in full in the report of the State Horticultural Society.

In the discussion on this question, Mr. Collins considered it important to keep trees in good, healthy condition by culture and plenty of food supply.

Mr. Tomlinson thought likely more potash was required in New England than in New Jersey.

The question was asked why would not sulphate of potash be better than muriate of potash.

Prof. Maynard.—The muriate gives the best results, probably from the special action of the chlorine.

Mr. Ege asked if severe pruning would not restore a tree to vigor and health, and if it was not more profitable to save trees in this way than to plant new ones?

Prof. Maynard thought that both propositions could be accepted with safety.

Mr. Ege continued.—His best fruit the past season was on trees that broke completely down three years ago, and were left to die. In some cases every limb was split down. In cleaning up the orchard, these limbs were cut off, the trunks of the trees remaining. These had sent out stout and vigorous shoots, which presented a healthy appearance and were shortened at pruning time last year, and bore the best fruit he had the past season.

Mr. Stiles asked as to the theory of the supposed action of potash.

Prof. Maynard.—The cells of the limbs of all old and diseased trees seemed to be filled with starch, which the potash seemed to dissolve and set in motion, or at least by increased leaf vigor to assist in the dissolution and change into sugar.

Mr. Horner.—Fifty years ago we had peach orchards that continued to live, grow and fruit for fifteen to twenty years, and it was

thought necessary to put them on the new ground; and after they failed it was considered unsafe to put peaches on the same ground again for fifteen or twenty years, and even then failure was more common than success. If young trees can be immediately planted on the old ground after the removal of the old trees, as the professor had stated, science had indeed done much for the peach.

Mr. Ward stated that city trees, severely pruned, produced new wood and bore abundant crops, though the trees were thirty years old.

Prof. Maynard.—Trees may be started into vigorous growth by severe pruning, but to keep them in vigor, the cause of weakness must be removed; if there be starvation or lack of any one of the necessary elements in the soil, more plant food of kind needed must be supplied. The trees must be kept in health just as a man or an animal is kept healthy, *i. e.* by wholesome, nutritious food. Too much food will derange the system and cause weakness just as surely as too little, and we have got to give plant feeding the same careful study that has been given to animal feeding, before we shall understand it as well. It is a much more difficult subject to understand, however.

Whether it would be more profitable to restore the trees to health after they have become diseased than to plant new trees, is a question for the practical orchardist to settle; everything, however, should be done to prevent disease by good treatment. The successful orchardist is the man who has such an interest in his trees that he knows at all times the exact condition of every one, and who will treat them according to their needs.

Mr. Norton understood from this discussion that new orchards could be planted on old, worn-out soils with a fair prospect of success, provided good culture and an abundance of plant food was supplied.

The Secretary remarked—This does not necessarily follow; the food supply, however abundant, must be in an available form. A man might starve or grow very thin with an abundance of food all around him, unless it was in such a condition that the system could assimilate it, so the health and vigor of the tree or vine depends on its ability to appropriate and digest, so to speak, the soluble portions of the plant food supplied.

Mr. White mentioned an orchard of fifteen acres in Quakertown, New Jersey, twelve years old, fertilized with wood ashes entirely, that had netted in that time \$18,000 since it came into bearing. The owner cuts out and destroys all branches as soon as any yellows appear, and is not troubled with premature ripening of the fruit. The same

party had a young orchard two years old, the finest he had ever seen of its age. The pits were planted where the trees were to stand, and budded the following September.

Mr. Cole asked the Professor if he had tried salt and noted its effects?

Prof. Maynard replied he had not; but as far as the chlorine may affect the growth of the trees, chlorine in common salt would be as beneficial as the same element in muriate of potash.

Mr. Norton mentioned an orchard near that city (Trenton) some years ago, owned and managed by a prominent agricultural editor, that seemed to suffer all the ills that a peach orchard is heir to; he thought it died from actual starvation. There never was, as he remembered, what might be called a fair crop. The orchard finally passed into other hands, the old trees removed, the ground prepared and planted to peaches again, some 5,000 trees. The ground was poor; they began to feed it; the trees were now in their fifth year, and the fertilizers used last spring was one ton of kainit to two tons of bone, thoroughly mixed and incorporated with the soil. The result was marvelous; instead of the poor, sickly trees of the former orchard, they were of a dark-green color, vigorous, healthy, and loaded with most beautiful fruit, the admiration of all who saw it.

Which is the earliest of the early potatoes? Reports of the past season's experience, by Secretary Williams. He planted May 1st, 1884, the following varieties:

Name.	1884.		1883.	
	Vines, dead days.	Yield, per acre.	Vines, dead days.	Yield, per acre.
Early Ohio.....	104	172 bu. 6 lbs.	108	219
Early Rose.....	112	238 bu. 46 lbs.	120	308
Rosy Morn.....	112	203 bu. 16 lbs.	.....	.....
Vanguard.....	112	200 bu.	.....	.....
Beauty of Hebron.....	112	209 bu. 44 lbs.	114	335
Pearl of Savoy.....	112	222 bu. 38 lbs.	.....	.....
Lee's Favorite.....	112	232 bu. 19 lbs.	114	302
Garfield.....	112	230 bu. 42 lbs.	.....	.....
Blush	120	269 bu. 25 lbs.	.....	.....
State of Maine.....	120	293 bu. 87 lbs.	.....	.....
White Star.....	124	295 bu. 14 lbs.	.....	.....
Adirondack .....	.....	223 bu. 51 lbs.	.....	.....
Dakota Red, from 1 lb. of seed .....	.....	219 bu. 35 lbs.	.....	.....
Dakota Red, from 1 lb. of seed .....	.....	305 bu. 32 lbs.	.....	.....

The last two computed as if the whole acre had been planted the same as the pieces from the one pound yielded. He closes his paper by saying, "Meanwhile, I must repeat my assertion of last year, that the *earliest* potato and the *best* early potato that I have yet found is the Early Ohio, which I have grown since its first introduction and before it was christened."

President Baker.—Account, as detailed by him, was small in bushels per acre, owing to the very protracted drought—only 2.39 inches of rain fell from April 25th, time of planting, till end of growth. His conclusions are: Early Ohio was earliest by ten days; Pearl of Savoy second, Vanguard third, with Lee's Favorite, Rosy Morn and Early Rose fit for use about the same time.

Mr. N. W. Parcell gave his experience :

Name.	No. of days ripening.	Bushels yield, per acre.
Early Ohio.....	104	290
Early Vermont.....	110	225
Beauty of Hebron.....	110	201
Watson's Seedling.....	115	249
Lee's Favorite.....	115	469
Rosy Morn.....	120	532
Queen of the Valley.....	120	356
Early Rose.....	120	325
Vermont Champion.....	.....	456
Mammoth Pearl.....	.....	401
Burbank.....	.....	326
White Star.....	.....	291
White Elephant.....	.....	271
St. Patrick.....	.....	292
American Magnum Bonum.....	.....	261
O. K. Prolific.....	.....	251

The last eight varieties, planted April 28th, were fit to dig about dig about September 1st (late varieties).

In the discussion, Mr. Parcell indorsed the paper of Mr. Williams, as to earliness of Ohio, and asked as to its quality compared with Rose.

Secretary Williams replied it was full as good; he thought better than Early Rose.

Mr. Parcell supposed it was due to soil; with him the quality was not up to the Rose. His yields of several of the kinds were much heavier than those given by Mr. Williams.

Secretary Williams.—Undoubtedly you have stronger and better soil than I have.

Mr. Ward remarked that the finest potatoes he sent to New Orleans were grown by Mr. Parcell.

Question box opened again.

Can the cracking of pears be prevented?

Yes, by grafting some kind that does not crack. Name the kinds? Mr. Lovett named Kieffer; Mr. Black, the Bartlett.

Which is the best for grafts, end of limbs or suckers?

End of limbs. Why? They are usually better developed and ripened, the growth being slower.

At the opening of the afternoon session, on the second day, December 30th, the Committee on Fruits, Flowers and Vegetables on exhibition made their report.

The committee says: "We find upon the tables a large and varied display of the products of orchards and gardens, well sustaining the high position our loved State holds in producing these bounties that add so much to the comforts and attractions of our homes, and counted among the staple crops of so large a proportion of our farms. They then report on sixty-six varieties of apples, nineteen of pears, two varieties of grapes in jars, one of oranges, two of quinces, twenty-one of potatoes, three of onion sets, one of salsify and one of horse-radish. In the flower line, a pot of *Freesia Refacta Alba*, and two floral designs.

At this point a few minutes were devoted to the testing of the qualities of some of the newer and rare fruits exhibited on the tables.

The apple shown by Mr. C. B. Horner, was handsome, of excellent quality. It originated in Pennsylvania, and it was proposed to call it Horner, till recognized or otherwise named.

The New Jersey Pie Apple, shown by Mr. Ward, was thought to be well worth growing. It is an old variety, very handsome, of large size, red, tender, crisp, sub-acid. But few trees now remain, and it should not be allowed to become extinct in the desire for new kinds. Another apple shown by Mr. Ward for name, was not recognized, and Mr. Caywood proposed to call it Ward.

Mr. Blackwell showed a seedling supposed to be from Smith's Cider; has borne six years; the best of 200 seedlings; it clings well to the tree, is sweet, and said to resemble in taste the banana; it was thought to be worthy of trial, and for the present to be known as Banana apple.

Mr. Heath showed a local apple from Hunterdon county, a good bearer, keeps well till April. Pronounced excellent and worthy of trial. It was named Heath apple.

Among the old-time and almost extinct varieties shown were fine specimens of that best of all sweet apples of its season, the Pompey or Victuals and Drink. A portion of the society's enterprise should be directed to preserving some of these old varieties.

The Nominating Committee presented a list of names of officers for the ensuing year; being duly elected, the list will be found in front of this report.

Ex-President Ward then gave a lengthy account in detail of the New Orleans Exposition, and his experience therewith.

In this connection a letter written by P. M. Augur, of Connecticut, to the Society, may not be out of place:

NEW ORLEANS, LA., December 23d, 1884.

E. Williams, Secretary:

DEAR SIR—I am very much pleased with the exhibit of fruit from New Jersey, under the care of Mr. Ward, of Newark. It is excellent and exhibited in good taste. A special feature which I had not seen before at this Exposition is the large number of varieties, such as Early Joe, Gravenstein, Potter, and others quite out of season, and yet in good condition for several days since being exposed. Some specimens, it is true, show indications of decay, but the dish of Gravensteins, Potters, and many others, are all still perfect. Also, among the pears, the Sheldons, Onondaga, Seckel, and others, I think, must surprise every beholder.

Your collection as a whole is excellent, and worthy of highest praise. When we remember these are dishes of fruit that were exhibited at Waverley and elsewhere, that all still in good condition by cold storage, and when the thermometer reaches 75°, as on Sunday it is said to have done, it is occasion for wonder that the fruit stands as well.

While I do not deem it wise or desirable to hold fruit greatly beyond its natural period of ripening, the success in this case shows the advantage of cold storage, and I am fully persuaded that I shall adopt it so as to effect a greater saving of our fruits and escape the gluts of our markets.

I trust your meeting in Trenton will be a success, as it undoubtedly will.

Your Society, representing a fruit State, properly takes a leading position, and your influence will be more and more felt as years pass on.

Respectfully,

P. M. AUGUR.

Quinces next came to the front, under the question, "Are quinces a profitable crop for New Jersey, and which are the best kinds?"

Mr. Wilcox took the affirmative side, and named Meech's Prolific as one of the best kinds to plant; he had had four years' experience

with Angers and Orange, but Meech's was superior to either, though not so large as the Champion. The fruiting spurs of Meech's are stubby, short and thick.

Mr. C. L. Jones said he knew very little about the profits of quince growing; his farm was in the City of Newark on a lot 100x200, and a house on it, on which he had two quince trees purchased ten years ago for the Orange, but it proved to be entirely different. He had been to Mr. Meech's and saw his trees, examined them carefully, and was satisfied that Mr. Meech's quince was identical with his, but not so large or so prolific, owing, he thinks, to superior cultivation on his part. Mr. Jones asked Mr. Wilcox what was a good fair yield of the Meech's Prolific on a tree *ten years* old; he replied three pecks or a bushel and a half per tree. Mr. Jones asked if this would not be considered a good yield; he replied it would. Mr. Jones asked what would be thought of trees that produced *five baskets* per tree, and stated that his yield in 1884, from two trees, was *fifteen baskets* of half a bushel each, numbering 782 quinces, many of which he sold at six dollars per hundred; the heaviest weighing seventeen and a quarter ounces, samples of which were on exhibition. He prunes annually the new growth to six or eight buds, thus throwing out strong fruit spurs, and producing large, handsome and perfect fruit, does not disturb the soil around or under the trees, but keeps it moist and rich by liberal dressings of stable manure each fall, and in summer mulching with salt hay; has had uniform good success for a number of years. From his experience he would say, quince culture was profitable; his sales this year, from two trees, being \$22.50, besides having two hundred quinces for himself and friends.

President Baker and ex-President Ward said they had visited Mr. Jones, and his quinces were truly wonderful, and exceeded anything they had seen.

Mr. Charles Black.—I consider quinces a profitable crop only so far as they can be given all the care and requirements that they demand. It is useless to plant quinces, and give them the same care and attention as other fruits. They require a deep, rich, cool soil (not wet)—a sandy loam is preferable. Each fall they want a heavy mulch; coarse stable manure is the best, as this serves as a mulch as well as a fertilizer—the fine fibrous roots of the quince run close to the surface of the ground, and must be protected from severe cold and heat. The next important thing is severe pruning. The young growth must be cut back at least one-half, and all small, useless

branches cut out. After this the borer must be looked after, or he will completely ruin the tree. Its work is plain, and if cut out each year about September, before it gets fairly in the wood, it is easily kept under. After giving nearly all a thorough trial, we believe none superior or equal to the old Orange or Apple. Any who purchases Champion, Meech's, or any other with the expectation of raising fine quinces without giving them the care they require, will be disappointed. We had the past year, on trees seven years old, a bushel to the tree of as fine quinces as could be found, averaging seventy-five to eighty to the bushel. These were the Orange.

Mr. Ward called attention to specimens of Angers quinces on the table, which he grew the past season; they were fine and profitable, as late a quince as any. Had fine specimens of Champion, Reas, Angers, Pear and Apple or Orange quinces, which were sent to the New Orleans Exposition, and if they had all been put together, he did not think any of the growers could separate their own from the rest. Even from fruit grown on the same tree, specimens could be selected differing so in character and appearance as to appear like distinct varieties.

Mr. Parry then offered the usual resolutions of thanks to all tending to make the meeting a success.

Trenton was selected as the place for the next annual meeting of the Society, at a date to be named by the Executive Committee.

After which the meeting adjourned *sine die*.

The fruit lists for the counties of Atlantic, Bergen, Camden, Cumberland, Essex, Hudson, Hunterdon, Middlesex, Mercer, Monmouth, Somerset and Union, and which gives the standard of the various fruits in these several counties, will form an Appendix to the regular report of the Society. These lists are made up by the various Vice-Presidents, and are the most reliable of any to be had. Mr. J. T. Lovett, of Little Silver, did the compiling, and deserves thanks for the same.

The above abstracts from the Tenth Annual Proceedings of the New Jersey State Horticultural Society comprise but a small portion of the entire report. The valuable and important papers read, the tabulated fruit lists for the State, &c., can be found in full in the tenth volume of the Transactions of the New Jersey State Horticultural Society, which can be obtained by addressing E. Williams, Secretary of such Society, Montclair, New Jersey, enclosing one dollar, thereby becoming a member of the Society.

New Jersey and Eastern Bee Keepers' Society.

NEW JERSEY AND EASTERN BEE KEEPERS' SOCIETY.

OFFICERS FOR THE YEAR 1885.

<i>President</i>	J. H. M. COOK.....	Caldwell, N. J.
<i>Vice President</i>	J. V. HUTCHINSON.....	Trenton, N. J.
<i>Secretary</i>	JOHN ASPINWALL.....	Barrytown, N. Y.
<i>Treasurer</i>	Prof. C. F. KROCH.....	Hoboken, N. J.

EXECUTIVE COMMITTEE.

Prof. C. F. KROCH.

A. J. KING.

J. V. HUTCHINSON.

SOCIETY REPORT.

The regular semi-annual conventions of the Society were attended as usual.

The spring meeting was especially interesting, and was continued two days. Subjects of special interest to beginners were discussed, viz.: Transferring bees, spring management of the apiary, spring feeding, &c.

Mr. A. J. King gave an interesting account of his running an apiary in Cuba the past winter; said that he had started there in the fall with less than one hundred stocks, and had increased to over two hundred, and had taken 4,000 pounds extracted honey.

The attendance at the fall meeting was so slim that no accurate statistics of the summer crop could be obtained; those present reported an average yield of from sixty to one hundred pounds per colony.

The past season was exceptionally favorable for the secretion of honey here in New Jersey. The abundance of fruit blossoms gave the bees a great start in the spring; white clover then followed, but was injured very much by excessive rains, but the flow of honey in August and September was abundant. "And we can truly say that New Jersey is the promised land of milk and honey."

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The problem of wintering bees successfully, and, Is pollen the prime cause of our winter losses? are now the most knotty as well as the most vital questions for bee-keepers to solve. But we hope, by a careful review of the experiments which practical bee men are now making, that we may soon be as certain of wintering our bees in good condition as we are of our farm stock.

N. J. and American Cranberry Growers' Association.

CRANBERRY GROWERS' ASSOCIATION.

OFFICERS FOR 1885.

PRESIDENT.

Dr. J. H. BRAKELEY.....Bordentown.....Burlington county.

VICE PRESIDENTS.

HON. THEODORE BUDD.....Pemberton.....Burlington county.

Dr. E. S. MERRIMAN.....Lakewood.....Ocean county.

SECRETARY AND-TREASURER.

HON. A. J. RIDER.....Trenton.....Mercer county.

STATISTICIAN.

N. B. FRENCH.....Elizabeth.....Union county.

EXECUTIVE COMMITTEE.

J. H. BRAKELEY.....Bordentown.....Burlington county.

A. J. RIDER.....Trenton.....Mercer county.

THEODORE BUDD.....Pemberton.....Burlington county.

N. B. FRENCH.....Elizabeth.....Union county.

CORRESPONDING SECRETARIES FOR NEW JERSEY.

M. M. CHEW.....Williamstown.....Gloucester county.

CHAS. L. HOLMAN.....Lakewood.....Ocean county.

Dr. L. W. BROWN.....Vineland.....Cumberland county.

ALFRED SATTERTHWAITE.....Crosswicks.....Burlington county.

WM. QUICKSALL.....Hornerstown.....Ocean county.

CORRESPONDING SECRETARIES FOR MASSACHUSETTS.

ISAAC ALGER.....Attleboro'.....Massachusetts.

O. M. HOLMES.....Boston (Box 5,223).....Massachusetts.

CORRESPONDING SECRETARY FOR CONNECTICUT.

D. C. SPENCER.....Old Saybrook.....Connecticut.

CORRESPONDING SECRETARY FOR RHODE ISLAND.

A. C. SAMPSON.....15 Weybosset street.....Providence, R. I.

CORRESPONDING SECRETARY FOR LONG ISLAND.

WM. JAGGERS.....Jericho.....Long Island, N. Y.

COMMITTEES FOR 1885.

Standard Measure—Crane, Rider, Satterthwaite, Collings and Chew.

Foreign Trade—Crane, French, Rider.

Scientific Investigations—Brakeley (J. H.), Dr. Goodell, Prof. George H. Cook.

Insects—Brakeley (J. H.), Holman, Applegate.

DELEGATE TO STATE BOARD OF AGRICULTURE.

Dr. J. H. BRAKELEY.....Bordentown.....Burlington county.

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NEW JERSEY AND AMERICAN CRANBERRY GROWERS' ASSOCIATION.

PRESIDENT'S ADDRESS.

GENTLEMEN—Less than a quarter of a century has passed since man began to render to nature any considerable assistance in the production of the cranberry. Prior to the close of the late rebellion, very little attention had been given to this industry, the natural product of our unsightly marshes being nearly sufficient to satisfy the wants of the cranberry-eating community. Since then, what an enormous increase in the demand! Four hundred thousand bushels annually barely supply the wants of our country; and if the supply falls much below this quantity, almost a panic is produced in the market, and very high prices rule.

The last twenty years has also witnessed a great change in the conditions necessary for successful cultivation. Something more is now needed than to clear a marsh of its turf, drain, sand and plant it with vines, and flow it annually, in order to secure an abundant harvest at the end of the third or fourth year. As the acreage under cultivation has increased, new difficulties have arisen. Insects living in our swamps, and feeding on the vines growing there sparsely—insignificant both in size and number—ran their little race from year to year, and from century to century, without attracting attention; but as soon as vast quantities of their natural food was supplied by cultivation, they multiplied to a fearful extent. The first to make its appearance was the one formerly known as the vine worm, the *Tortrix oxycoccana* of the entomologist. This came unheralded, save by the destruction which it wrought, changing large areas of the most promising vines into an unsightly, barren waste. But man's ingenuity soon discovered a remedy. As the parent moth survives the winter, and deposits its eggs in the early spring, finishing its career before the close of April, where the vines are kept under water until the first of May, it has no

opportunity to continue its race. And besides, nature has lent a helping hand in its destruction. It has recently been discovered that an ichneumon fly has found the larvæ of the *Tortrix* a suitable place in which to deposit its eggs and rear its young, thus bringing death to immense multitudes of this depredator, so that in some localities where it formerly abounded it has now become almost extinct.

But scarcely had we learned to combat successfully this enemy, before another, and a more formidable one, appeared, the *Anchylopera vacciniana* of science. Depositing its eggs on the under side of a leaf, in appearance like those of the *Tortrix*, only slightly smaller; with larvæ about the same size and very similar, with the June and August broods of moths of the two appearing at the same period, it was some time before the ravages of the one could be distinguished from those of the other. But continued observation developed the fact that while the *Tortrix* had three broods in the year, the *Anchylopera* had but two, and that the eggs of the first brood of larvæ of the latter, which appeared in the spring, are uniformly deposited in the preceding August. This other disagreeable fact was also brought to light, that these eggs are coated with a varnish which is impervious to water, so that winter flowing has no effect upon them. Hence a different mode of attack had to be devised. In a paper read before this Association, at our meeting in August last, I presented a detailed statement of the best method, so far as known, of checking the ravages of these insects, so it is unnecessary to repeat them here.

Last season this insect seemed less numerous in some localities than in former years. This may have been caused by the amount of wet weather during the season, acting as a check to their multiplication. Or it may be that nature is providing a check here also, as in the case of the *Tortrix*. Two facts have come under my notice, pointing in this direction. During last summer, in two instances, parasites were found on the larvæ of the *Anchylopera*, which, from appearance, I took to be those of an ichneumon fly. A short time before this, in applying kerosene to a badly infested plot, I noticed vast multitudes of a fly, in appearance like the ichneumon, making their escape with the *Anchylopera* moths. It is to be hoped, therefore, that here, also, in the ample economy of bounteous nature, provision has been made for a check upon the multiplication of this insect, which has so long baffled human ingenuity.

And now still another destructive insect has made its appearance among us, namely, the tip worm, an example of the work of which was furnished this association at its meeting last August by Mr. Downey. The terminal bud was destroyed, and, besides, the insect had eaten a portion of the upper surface of the two adjoining leaves. The insect is said to be about the eighth of an inch long. Mr. J. B. Smith, in the report of his investigations in regard to insects injurious to cranberries, says: "Early in July I noticed in one small spot on a bog an occasional vine which had failed to grow, and had a bud, apparently just ready to open. Examining some of these, I found the tip eaten off, and the outer leaf only covering the destroyed tip; further search developed a specimen or two of a small, red, apodous grub, about half a line (0.04 inch) in length, tapering toward each end, but most toward the head. * * * * A few pupæ were found, from one of which the imago emerged toward the end of August, during my absence from home; from the remains the insect seems to be a minute midge of a clay-yellow color, with long legs and antennæ."

The insect here described by Mr. Smith is much smaller than the one seen by Mr. Downey, being only about one-third its length. Evidently further investigations are needed before the habits of this insect can be determined, and an effective remedy provided.

In this connection I will make a suggestion which may be of service in determining the habits of this new-comer. If the insect noticed by Mr. D. and Mr. S. is the same, as I think it is, notwithstanding the difference in the size reported, it would indicate three broods during the season, each having about six weeks in which to complete its growth, and effect its various changes. The grub noticed by Mr. Downey would have time to pupate and emerge in autumn as the perfect insect, and deposit its eggs for a new brood about the middle of the following May. This would pass through its various changes, and appear again in the larvæ state early in July, at which time Mr. Smith noticed it. Whether water will destroy the egg is yet to be determined.

Two other insects do much damage every year in portions of the cranberry region of Massachusetts, which are known to exist in New Jersey, which, however, have hitherto done but little injury in our State. These are the berry-worm and the span-worm. The moth of the former has never been classified. Years ago I reared a number

from the larvæ, and retained a single specimen until quite recently, when I gave it to Mr. Smith, who sent it to an expert to have it described and classified. It had become so marred, however, that this could not be done. In New England they have found no remedy for it, and, owing to its habit of burrowing into the berry, it will be exceedingly difficult to reach it in the larvæ state by any known insecticide. A parasite is said to feed upon it, which is doubtless the reason why it does not multiply with us.

The other is the span-worm, heretofore known to exist only in small numbers in our State. It is well, however, for us to be on our guard against it. Its close resemblance in color to a cranberry vine, and its habit of closely clasping the vine, will probably prevent its being discovered, except by its ravages. Should it become abundant, I have no doubt but that either kerosene or pyrethrum would prove an effectual remedy.

Crickets and grasshoppers continue each year to claim a portion of the crop on most bogs. Kerosene does effective work on these when it can be brought in contact with them, but they cannot be reached without tramping over the bog when the fruit is nearly matured, thus making the remedy about as bad as the disease. The most effectual remedy I am acquainted with is a flock of turkeys.

But the conditions of successful culture have changed in other particulars than those growing out of a multiplication of insect enemies. To say nothing of that mysterious visitant, the rot, which has hitherto baffled all efforts to determine its cause or provide a remedy (but which came just in time to prevent over-production, and the probable ruin of the industry), other changes have taken place, which the man who would continue to succeed may not ignore.

Twenty years ago, few, if any, thought to inquire, how long will a plantation last? Is there any danger of the vines dying out? The general appearance of a new planting was one of extreme vigor and healthfulness, and there was nothing to suggest the question, which would then have seemed little less than an impertinence. But some years since it became evident that vines would not continue to flourish and bear fruit forever. Here and there, on peat bottoms, where the vines were large, small sections would begin to die. From year to year these patches multiplied and enlarged. As the crops continued good, and as very many owners of plantations were non-residents, paying only an occasional visit, this decadence was either not noticed

or failed to receive attention. So it continued until large portions of the most productive bogs had passed beyond the hope of recovery. A few cautious growers foresaw the approaching evil, and sought out and applied a remedy. The cause of this decadence is readily understood. The bud for the next year's growth is formed annually in August and September, at the end of the last year's growth. This continued from year to year, in the course of time makes the vines very long, especially on rich peat bottom—so long that the sap is not able to travel so far, and of necessity the vines die.

Two remedies are at hand, either of which is efficacious if employed in time, that is, before the vines have begun to die. The one most generally employed is resanding, the other mowing off the large vines and allowing them to grow up again. Both these methods have been employed on Cape Cod, where this industry is a little older than it is with us, and where more care is bestowed upon it. Growers there, I am assured, do not hesitate to sacrifice the crops of one year by heavy sanding, or by mowing off the vines. Better this, certainly, than to allow the vines to die out, which not only involves the expense of replanting, but also the loss of several crops until the newly-planted vines can come into a bearing condition again.

The effect of sanding is different on different soils. My first experiment, made a number of years since, had a most favorable result, the sand having been put on in the spring before the water was drawn off, a scow being used for the purpose. In the following autumn the berries on the sanded portion were fully twenty per cent. larger and of a darker color. I have been informed by others, however, that with them, the crop of the following year was diminished by sanding. And this is likely to be the result where the sand is applied by the wheel-barrow or car, as it is next to impossible to prevent covering a portion of the vines when thus applied. With the scow it is different, as when the sand is spread in the water, it will settle among the vines without pressing them down. Where the banks surrounding a bog are sufficiently high to make this mode practicable, it is decidedly preferable, and quite as economical.

Another cause of the deterioration of some of our best bogs is the spreading of one of the sedge grasses (*Carex bullata*), which gradually takes possession of large sections, crowding out most of the vines. Being difficult to eradicate when it once gets possession, it is likely to remain and spread. Some years since I set some workmen to take out

some patches, giving myself no personal attention to their work. The year following the sedge was quite as thick as it had been, the workmen having failed to remove the roots. I then had it turfed off and replanted—an effectual way, certainly, to get rid of it, but not the best. Since then I have learned that, with care and patience, most of the roots can be gotten out, and the remaining ones removed the following year, thus giving the few remaining vines a chance to gain possession again.

As the years have passed on, unflowed bogs and portions of bogs have gradually ceased to be productive, the vines, in most instances, having died out.

The causes above named have produced a very considerable decrease in the acreage of productive cranberry lands, which has scarcely been replaced by new planting. Indeed, prudent men are very cautious about making new plantings—the rot, where it prevails, being worse on new than on old bogs. And yet, notwithstanding this decrease, in ordinary seasons we seem to have quite enough fruit to supply the demand. The June frost of last year caused serious loss in this region, and yet our New Jersey crop of 114,000 bushels would have been ample for our wants, had it not been so heavily drawn upon by Chicago.

The facts here presented will, I think, aid us in forming a correct opinion of the present condition and needs of the cranberry interest. To keep it in a healthy condition two things are required of cranberry growers. The first is to bestow special care upon our old bogs, which have, in the past, shown themselves to be truly valuable; preventing their deterioration, and replanting them where they have died out. Far better and safer this than to extend the acreage. From our present knowledge it is evident that our good bogs need not depreciate. With proper care they may be made a permanence; without it they will soon cease to be productive. Where they have begun to die out let the old vines be removed, and the cleared place replanted. Let sanding be done when needed. Let the sedges, briars and all other intruders be removed, and then will our plantations be what they were once supposed to be—a permanence.

The other matter needing attention is a careful looking after and study of the habits of insect enemies. Much has been accomplished in this direction already, but much still remains to be done. Let every grower, by frequent strolls over his plantation, see that no insect enemy

gains a lodgment without his knowledge; and then if any are discovered, let it be reported to this Association. The wise man tells us that "in the multitude of counselors there is safety." Combined wisdom will often prove effective, where individual effort would fail. I have been surprised to learn that in the great cranberry region of New England, where the industry is older than it is with us, and where hurtful insects are more numerous, until within a year or two past very little had been done to check their ravages. While more shrewd than we in many particulars, our New England fellow-culturists seem to have lost sight of the benefit of combined effort, and have left their Cranberry Growers' Association to die. I trust that growers everywhere will come forward to the support of our organization, and that it may be productive of even greater good in the future than in the past.

From the views of the subject presented, then, it becomes evident that the man who would be a successful cranberry culturist must keep abreast of the times in his information—must make himself acquainted with the dangers that threaten, and the remedies provided. Here, as in every other industry, it is obvious that the Great Author of nature, in giving man dominion over His works, intended that he should maintain this dominion by a constant and vigorous exercise of all his intellectual faculties, otherwise this dominion will pass away from him, and the lower orders of creation gain the ascendancy.

A vote of thanks was tendered Dr. Brakeley for his excellent address.

STATISTICAL REPORT.

Mr. President and Gentlemen:

Numerous advices from cranberry growers throughout the country in August last led the Statistician to estimate the crop on the vines as follows:

	Bushels.
New Jersey.....	130,000
New England.....	120,000
Wisconsin	80,000
Total.....	330,000

Or about four-fifths of the crop of 1883.

About seven hundred inquiries were mailed to cranberry growers on the 14th October last, asking each for statement of actual crop in

the years named. The reports summarized in the following table have been received in reply.

TABLE COMPARING AND CALCULATING THE CRANBERRY CROP OF 1884 IN BUSHELS.

	Number of reports stating crops of 1883 and 1884.	Total for 1883.	Total for 1884.	Gain per cent over 1883.	Loss per cent. from 1883.	Crop of 1883 as per Statisticians' last report	Crop of 1884 shown by percentages of gain or loss.
New Jersey.....	47	48,065	40,747	.....	5	118,524	114,598
Cape Cod, including Martha's Vineyard and South Carver.....	51	26,170	26,018	.....	.....	.....	.....
Other parts of New England and New York.....	88	8,280	5,694	.....	.....	.....	.....
Totals for New England and New York.....	89	83,430	81,712	.....	5	141,964	133,866
Western States.....	27	46,181	7,901	.....	88	135,507	23,087
Totals.....	168	122,676	80,360	.....	.....	395,995	271,501

It will be seen that this last calculation makes the New Jersey crop 15,412 bushels smaller than the August estimate, the New England crop 13,866 bushels larger, and the Western crop 56,963 less.

The movement of the New Jersey crop, to January 2d, 1885, according to reports from railroads, &c., made to the *Cranberry Bulletin*, has been as follows:

	Bushels.
To New York.....	20,464
To Philadelphia.....	30,656
To the West.....	50,472
To Home Market, say.....	4,000
Total.....	105,592

This movement deducted from the crop estimate of 114,598, indicates only 9,006 bushels remaining in the hands of growers January 2d, 1885.

From the same sources we learn that the movement from New England to New York, by the Fall River, Stonington, Norwich, Long Island, Providence and New Bedford lines, has been 59,213 against 53,701 to the same time last year, but only the Fall River line, which brought 57,194, has been regularly reported by the Mercantile Exchange. The others have been entered from partial and unofficial information, and, no doubt, much understate the actual

amount. Sail vessels also bring some each season. The shortage on these imperfect returns is estimated at 12,000, thus making the receipts at New York from New England 69,194 bushels, against 68,701 in 1883.

To Boston the Old Colony system of roads carried 31,664 bushels. Add for other lines, say 6,000, and we have 37,644, against 46,262 last year, and 40,340 in 1882. The movement of the New England crop may, therefore, be set down as follows :

	Bushels.
To New York.....	69,194
To Boston..	37,644
Other New England markets, say.....	10,000
Philadelphia, direct	5,000
The West, direct.....	6,000
In all.....	127,838

Which, taken from the crop estimate of November 8th, leaves 6,028 bushels apparently unmoved.

The receipts at Chicago from Wisconsin this season to January 1st, amount to 18,924 bushels, against 102,844 to same time last season. It is estimated that about one-quarter of the Wisconsin crop is used in that State and elsewhere without reaching Chicago. The movement of this crop to Chicago practically ceased before December 1st, apparently nothing being left in the hands of growers. Add one-quarter of the crop estimate of November 8th to the Chicago receipts, and we have 24,783, which exceeds that estimate by 1,746 bushels.

Some cranberries must have been grown in other Western States, so that the Western crop of 1884 may be set down 26,000 bushels, instead of 80,000, as estimated at the August meeting, and against 135,507 in 1883. From all this it appears that the entire crop of 1884 must have been in round numbers about 275,000 bushels, against 396,000 in 1883.

THE COURSE OF TRADE.

The small crop apparent at the August meeting, and reduced still lower by later reports, prompted opening prices in New York at about \$14 per barrel, and \$4.50 for boxes of best Cape Cod fruit, or \$2 per barrel higher than in 1883, and \$4 higher than in 1882. The opening prices were, for the first month, fairly sustained. By this

time it was apparent that a large movement from New Jersey, directly West, was in progress, which confirmed the later reports of a much smaller crop in Wisconsin than was calculated at the August meeting. The New York market was thereby strengthened, and gradually improved, prices reaching, in the first half of December, \$16.50 for fancy Cape Cod in barrels, or about \$4 per barrel more than at same time in 1883.

New Jersey cranberries, of good quality, opened in New York at about \$2.75 to \$3 per standard crate. But at these comparatively low prices but few could be sold early in the season, the New York demand being for the higher colored Cape Cod fruit. There was, however, no occasion for pressing the New Jersey fruit upon the New York market, because it was being rapidly taken at the country stations, at corresponding prices, to ship directly West. This demand continued until nearly one-half the crop had, by the middle of November, been thus moved.

The New Jersey fruit continued to improve in price until \$4.50 and \$4.75 was reached early in December, being fully \$1 per crate higher than the year before. These prices have prevailed when the best apples were selling by the barrel at less than half the price of a crate of cranberries.

From the middle of December to January 1st unexpected dullness prevailed.

Since the holidays, and quite unlike a year ago, this falling off in demand has continued and become still more depressing.

Concessions in price have—perhaps unwisely—been offered without drawing orders or increasing sales. The stock in New York is small and certainly seems to be very small in the country, and the hope is entertained that all will yet be wanted at fair prices if not at the full rates prevailing before the holidays.

Those who improved the opportunity to sell early did well, and in some cases better than the buyers. Those who held on longer and sold before the turn of the tide, did, perhaps, better, and we may hope that a returning tide will yet reward those who are still waiting.

PACKAGES.

The new Massachusetts law requiring uniformity of size in cranberry packages reads as follows:

SECTION 1. Section twenty of chapter sixty of the Public Statutes is amended to read as follows:

SEC. 20. The legal and standard measure of a barrel of cranberries shall be one hundred quarts, and of a crate of cranberries, thirty-two quarts, level measure; and every manufacturer of barrels or crates for cranberries shall brand or mark plainly his name, and the words, "Massachusetts Standard Measure," upon all such barrels or crates.

SEC. 2. Whoever brands or marks upon any barrel or crate for cranberries, of a less capacity than the above, the words, "Massachusetts Standard Measure," shall forfeit for every such offense the sum of two dollars.

Under this law the variations of size in cranberry crates from that State have not been so great as heretofore, but the expected uniformity has been far from realized.

The clear inside measurement of crates from four different makers found on the New York market was as follows:

22 x12x8 inches	=	2,112	cubic inches.
20 x12x8½	"	2,040	" "
22½x12x7½	"	1,991	" "
22 x12x7½	"	1,914	" "

Between the largest and smallest of these, there is a difference of ten per cent., while the largest is about five per cent. smaller than the New Jersey Standard. The prescribing capacity of crates, instead of definite shape and size as in the New Jersey law, seems to have led to this disparity, every maker having a different notion as to the size required to hold thirty-two quarts level measure.

Some of the leading cranberry growers of Cape Cod urged the adoption of the New Jersey Standard, but the smaller measure men prevailed with their thirty-two quart prescription.

The result is unsatisfactory, and an amendment may be attempted this season.

In New Jersey the large shipments directly West were almost wholly made in standard crates, smaller ones being studiously avoided, or taken only at their relative measure. Otherwise, about the usual proportion of undersized crates have no doubt been used, and will be continued, unless efficiently prohibited by law.

In New York and Philadelphia the practice of transferring from standard to smaller crates continues, and will, no doubt, flourish until some law, State or National, interferes.

The following sizes are established by law in New Jersey:

BOXES OR CRATES.

Bushels.....	8 $\frac{1}{2}$ x12x22 inches	} inside measure.
Pecks.....	8 $\frac{1}{2}$ x 6x11 inches	

BARRELS.

Depth.....	25 $\frac{1}{2}$ inches	} inside measure.
Diameter head.....	16 $\frac{1}{2}$ inches	
Diameter bilge.....	18 $\frac{1}{2}$ inches	

The law of Massachusetts requires the cranberry barrel to hold one hundred quarts, dry measure, which is practically the same as the New Jersey legal barrel.

Three New Jersey crates equal a barrel, but the Massachusetts legal crate holds nearly five per cent. less than the New Jersey, while they have this season, as above shown, had a practical average of more than ten per cent. below the New Jersey Standard.

The report was accepted and adopted with thanks of the association.

A. J. RIDER,

Trenton, January, 1885.

Secretary.

STATE GRANGE OF NEW JERSEY,
PATRONS OF HUSBANDRY.

STATE GRANGE OF NEW JERSEY.

OFFICERS:

Master.....	RICHMAN COLES.....	Woodstown, Salem county.
Overseer.....	JOHN STATESIE, JR.....	Colts Neck, Monmouth county.
Lecturer.....	MORTIMER WHITEHEAD.....	Middlebush, Middlesex county.
Steward.....	HENRY F. BODINE.....	Locktown, Hunterdon county.
Assistant Steward.....	GEORGE H. GAUNT.....	Paulsboro, Gloucester county.
Chaplain.....	CHARLES SHOEMAKER.....	Mantua, Gloucester county.
Treasurer.....	C. A. RULON.....	Swedesboro, Gloucester county.
Secretary.....	M. D. DICKINSON.....	Woodstown, Salem county.
Gate Keeper.....	E. E. HOLCOMBE.....	Lambertville, Hunterdon county.
Ceres.....	LYDIA D. COLES.....	Woodstown, Salem county.
Pomona.....	MAY J. WHITEHEAD.....	Middlebush, Middlesex county.
Flora.....	ETTIE A. JESUP.....	Cinnaminson, Burlington county.
Lady Assistant Steward.....	HANNAH C. HOLCOMBE.....	Lambertville, Hunterdon county.

EXECUTIVE COMMITTEE:

RICHMAN COLES.....	Woodstown, Salem county.
JAMES H. BAIRD.....	Marlboro, Monmouth county.
ROBERT TAYLOR.....	Columbus, Burlington county.
JOHN T. COX.....	Readington, Hunterdon county.
I. W. NICHOLSON.....	Camden, Camden county.

LIST OF DEPUTIES FOR 1885:

Burlington county.....	D. T. HAINES.....	Medford, Burlington.
Camden county.....	AMOS EBERT.....	Ashland, Camden.
Cumberland county.....	J. C. BOWEN.....	Shiloh, Cumberland.
Essex and Sussex counties.....	R. F. HARRISON.....	Livingston, Essex.
Gloucester county.....	MATTHEW ALLEN.....	Jefferson, Gloucester.
Hunterdon county.....	J. T. COX.....	Readington, Hunterdon.
Monmouth county.....	JOHN STATESIE, JR.....	Colt's Neck, Monmouth.
Salem county.....	EMPSON ATKINSON.....	Woodstown, Salem.
Mercer county.....	THEODORE CUBBERLY.....	Hamilton, Mercer.

LIST OF MASTERS AND SECRETARIES, WITH THEIR POST OFFICE ADDRESSES, OF THE SUBORDINATE GRANGES
OF NEW JERSEY.

NAME OF GRANGE.	MASTERS.	POST OFFICE ADDRESS.	SECRETARIES.	POST OFFICE ADDRESS.
Marl Ridge.....	B. A. Morton.....	New Egypt, Ocean county.....	F. S. Gaskill.....	New Egypt, Ocean county.....
Swedesboro.....	Joseph W. Gill, Sr.....	Mickleton, Gloucester county.....	Jennie L. Moore.....	Swedesboro, Gloucester county.....
Moorestown.....	Franklin M. Thomas.....	Moorestown, Burlington county.....	Kate B. Lippincott.....	Hartford, Burlington county.....
Woodstown.....	John A. Filcraft.....	Woodstown, Salem county.....	S. B. Pancoast.....	Woodstown, Salem county.....
Paulsboro.....	Alonzo P. Rambo.....	Paulsboro, Gloucester county.....	George H. Gaunt.....	Paulsboro, Gloucester county.....
Vineland.....	H. R. Ingalls.....	Vineland, Cumberland county.....	Laura J. Ingalls.....	Vineland, Cumberland county.....
Ringoes.....	Augustus Blackwell.....	county.....	F. S. Holcombe.....	ity.....
Cohansey.....	Isaac D. Woodruff.....	county.....	N. L. Woodruff.....	ity.....
Edgewood.....	Nathan S. Wright.....	county.....	William S. Taylor.....	ity.....
Hopewell.....	W. S. Bonham.....	ity.....	Louis Schaible.....	ity.....
Cumberland.....	John M. Hall.....	Greenwich, Cumberland county.....	Morris Goodwin.....	ity.....
Union.....	Joel Horner.....	Merchantville, Camden county.....	E. J. Ostler.....	ity.....
Harrisonville.....	Asa Lippincott.....	Harrisonville, Gloucester county.....	Edwin Starn.....	ity.....
Franklin.....	Wm. T. Richman.....	county.....	E. Garrison.....	ity.....
Bridgeport.....	B. Franklin Rulon.....	county.....	D. R. Black.....	ity.....
Medford.....	Job Braddock.....	county.....	Phebe Ann Phillips.....	ity.....
Mt. Holly.....	James Lippincott.....	county.....	Lydia H. Gandy.....	ity.....
Haddon.....	R. Lewis Shivers.....	Camden, Camden county.....	Horace M. Ebert.....	ity.....
Mantua.....	Charles Shoemaker.....	Mantua, Gloucester county.....	Mary G. Duell.....	ity.....
Lawrence.....	Franklin Dye.....	Trenton, Mercer county.....	Charles Smith.....	ity.....
Hope.....	D. W. Podget.....	.....	W. B. Cook.....	ity.....
Rancocas.....	Joseph Lundy.....	.....	Uriah Borton.....	ity.....
Pemberton.....	Joshua Forsyth.....	.....	H. R. Lippincott.....	ity.....
Mullica Hill.....	John C. Hazleton.....	.....	John Foster.....	ity.....
Readington.....	W. H. Onie.....	Readington, Hunterdon county.....	John T. Cox.....	Readington, Hunterdon county.....
Centre Grove.....	George Taylor.....	Millville, Cumberland county.....	Wm. H. Taylor.....	Millville, Cumberland county.....
Columbus.....	Wm. Henry Taylor.....	Columbus, Burlington county.....	Thomas A. Keeler.....	Columbus, Burlington county.....
Course's Landing.....	T. Newton Steward.....	Sharptown, Salem county.....	Henry Gardiner.....	Sharptown, Salem county.....

MASTERS AND SECRETARIES, WITH THEIR P. O. ADDRESSES, OF THE SUBORDINATE GRANGES IN N. J.—Continued.

NAME OF GRANGE.	MASTERS.	POST OFFICE ADDRESS.	SECRETARIES.	POST OFFICE ADDRESS.
Crosswicks.....	David C. Rulon ..	Crosswicks, Burlington county.....	Mrs. E. A. Rogers.....	Crosswicks, Burlington county.....
Pennington	E. H. Drake.....	Pennington, Mercer county.....	Ira Stont.....	Pennington, Mercer county.....
Ewing	John V. Green.....	Pennington, Mercer county.....	George L. Horner.....	Trenton Junction, Mercer county.....
Mercer.....	N. B. Van Pelt.....	Pennington, Mercer county.....	.....	Hopewell, Mercer county.....
Hamilton.....	Theo. Cubberly.....	Pennington, Mercer county.....	.....	Hamilton Square, Mercer county.....
Friesburg.....	Chas. F. Dickinson.....	Pennington, Mercer county.....	.....	Alloway, Salem county.....
Williamstown.....	Thos. E. Burrows.....	Cohansey, Cumberland county.....	.....	.....
South Vineland.....	Wm. Russel.....	Williamstown, Gloucester county.....	M. D. Learned.....	.....
Locktown.....	Uriah Sutton.....	South Vineland, Cumberland county.....	Geo. W. Hockenbury.....	.....
Blackwood.....	John Stetser.....	Locktown, Hunterdon county.....	Theo. Hider.....	.....
Monmouth.....	John Stetser.....	Chevs Landing, Camden county.....	James H. Baird.....	.....
Allentown.....	F. B. Wetherill.....	Colts Neck, Monmouth county.....	Mrs. A. R. Ely.....	.....
Holmdel.....	Milton Smock.....	New Sharon, Monmouth county.....	S. B. Wells.....	.....
Sergeantsville.....	N. B. Rittenhouse.....	Wickatunk, Monmouth county.....	Frank W. Venable.....	.....
Livingston.....	H. F. Harrison.....	Sergeantsville, Hunterdon county.....	Theodore S. Smith.....	.....
Morris.....	W. F. Ely.....	Roseland, Essex county.....	Theodore A. Hopping.....	.....
Kingwood.....	H. P. Shaw.....	Hanover, Morris county.....	J. S. Stull.....	.....
Caldwell.....	Milton H. Canfield.....	Kingwood, Hunterdon county.....	Frank C. Goble.....	.....
		Verona, Essex county.....		Frenchtown, Hunterdon county.....
				Verona, Essex county.....

POMONA GRANGES.

COUNTY.	MASTERS.	POST OFFICE ADDRESS.	SECRETARIES.	POST OFFICE ADDRESS.
Hunterdon.....	Job Braddock.....	Medford.....	Edmund Braddock.....	Medford.....
Cumberland.....	H. F. Bodine.....	Locktown.....	F. S. Holcombe.....	Lambertville.....
Mercer.....	J. C. Bowen.....	Shiloh.....	Lewis Schaible.....	Shiloh.....
Salem.....	Theo. Cubberly.....	Hamilton Square.....	Geo. W. Johnston.....	Trenton.....
Camden.....	J. W. Dickinson.....	Woodstown.....	Edwin L. Borton.....	Woodstown.....
Gloucester.....	John Gaunt.....	Mullica Hill.....	Zilla H. Adams.....	Mickleton.....
Monmouth.....				

REPORT OF STATE GRANGE OF NEW JERSEY.

BY RICHMAN COLES, WOODSTOWN.

The necessity of organization among farmers is being realized and its benefits more and more appreciated.

The Order of Patrons of Husbandry, in its quiet, steady progress, is gradually working its way into the minds of the general public, overcoming their prejudices, improving their sentiments and attracting the attention of its thinking men.

It is always a pleasant duty, in reviewing the work of an organization, to be able to report its growth and prosperity.

Such may be said of the Order in this State; its growth though slow in regard to numbers, yet their interest and energy in everything relating to agriculture are causing the members of other agricultural associations to seek its co-operation.

It is the farmers' school, where they, with their wives and children, meet together on a common footing, and there communicate to each other, by reading, speaking, or written essays, whatever knowledge they may possess on every subject relating to the farm and household. This educational and social feature is developing the minds of the members to a remarkable degree. It is cultivating a taste and fondness for agricultural pursuits, which will have a tendency, in a great measure, to stay the rush of our sons to the crowded cities, or from other more hazardous occupations of life.

To the training in the Order of Patrons of Husbandry may be traced the usefulness of many of those who are assembled here to participate in the exercises of this meeting.

It numbers in this State something less than 2,000 members, yet their work is plain to all observant farmers.

The monthly, semi-monthly or weekly meetings of its members, and ready communication with each other from all parts of the State,

of any and all questions relating to their occupation, make it a complete organization of agriculturists.

Because we are thus organized it does not go to prove that we are in antagonism with other pursuits.

Because we meet together and take counsel of each other in regard to our best interests, and by what means we can promote our happiness and welfare, it does not follow that we are at warfare with other branches of industry, but by so doing are only keeping pace with our fellows, as every pursuit in life, from our railroad organizations, through every business or trade, to the news boys on our streets, are bound together for mutual protection.

Co-operation is one of the principles of our Order, and no argument is needed to prove its necessity.

Thousands of dollars have been saved to the farmers by co-operative enterprise. The term co-operation, in a grange sense, is not confined to business enterprises; it also means protection to our industries by the selection of law-makers who are in sympathy with the interest and advancement of agriculture, to the same extent as other industries. The elevation of our people, the happiness of our homes, and the best interest of society demand it.

Agriculture is the leading industry of this country, its workers equaling, if not outnumbering, those engaged in all other occupations. Its investments are likewise greater than those of any other industry. It is then but in justice to the calling that we, its representatives, should ask that every safeguard should be thrown around it, for co-operation in the Grange means equal rights and advantages to all.

National Association of Jersey Red Swine Breeders.

NATIONAL ASSOCIATION OF JERSEY RED SWINE BREEDERS.

OFFICERS FOR 1885.

<i>President</i>	JOS. K. LIPPINCOTT.....	Woodstown, N. J.
<i>Vice President</i>	EDWIN COLSON.. ..	Daretown, N. J.
<i>Secretary and Treasurer</i>	CLARK PETTIT.....	Salem, N. J.

DIRECTORS.

WM. D. HILL.	Moore, N. J.
HENRY W. AUSTIN.....	Woodstown, N. J.
S. J. DU BOIS.....	Daretown, N. J.
PETER E. SMITH	Salem, N. J.
J. MORRIS REEVE	Salem, N. J.
STACY W. HAZELTON.....	Harrisonville, N. J.

SWINE BREEDING OF SOUTH JERSEY.

To the State Board of Agriculture:

GENTLEMEN—Swine breeding has long been a prominent agricultural industry of Southern New Jersey—primarily due to its soil and climate being especially adapted to the profitable growth of both clover and corn, two very essential factors in economical swine production, which is still considered fairly remunerative in the almost universally existing system of mixed husbandry; not alone from the cash returns from the sale of surplus pork, but as a very efficient means of increasing the fertility of the soil, by the conversion of a leading staple (corn) into manure, thus making the production of swine and corn dependent upon each other, and annually increasing in like ratio.

Owing to a continuously sharpened competition by Western feeders on cheaper lands, aided by reduced transportation rates, our farmers have only been able to secure continued profits through a constant

improvement of their stock and increased skill in feeding the same, so that the minimum of cost is approximated. Thus, during the last two decades a most rapid improvement of our general swine stock has been attained, probably resulting now in a better general average of quality and breeding than the average swine production of any other locality. In this great competitive race for excellence, all the various improved breeds have been more or less experimented with, and while all have given evidence of worth, more or less dependent upon surroundings, a local breed, long and favorably known as Jersey Reds, have proven most profitable and hence best adapted to the wants of our feeders, with their improved methods of feeding and handling, and in whose hands they have far eclipsed all results ever before secured in swine feeding, making the heaviest average weights at all ages, from pignood to maturity, of which history relates. Brought thus prominently into public notice, our State and local agricultural societies added their influence by giving the breed a separate classification in their premium lists, under its long-established name of Jersey Reds, making it a feature of their fairs. These continued successes at home naturally increased a previously existing demand for breeding animals from all sections of the United States.

As the remarkable annual results thus attained by the pure-breds and high grades of this breed were heralded forth to public notice, unscrupulous breeders of other red hogs of distant localities set up a claim that their red hog stock, previously known as Saratoga Reds, Durocs, &c., were identical with the improved Jersey Reds of New Jersey, based solely upon the claim of a leader in this movement, that said stock were the descendants of a single red boar pig taken from Salem county, New Jersey, forty years previously, and crossed promiscuously upon the various swine stock of said localities (Saratoga and Washington counties, New York), through forty years or generations of breeding, without subsequent crosses from New Jersey, under widely different conditions of skill, feed and climate.

All will readily recognize that the true object and purpose of this preposterous claim was to float their less meritorious red hog stock (which had never achieved a single special meritorious result) to a profitable market, upon the flood-tide of Jersey Red success. How well they succeeded is now a matter of history, since the successful dissemination of their stock under a false pretense of identity (if not of color) soon led to the organization of an association, euphoniously

styled The Duroc-Jersey Association, with a herd book, in which were recorded Saratoga Reds, Durocs, Jersey Reds, &c., and their varied crosses; the only test as to the eligibility and breeding of such stock required, being the signature of the shippers, who, as is well known, frequently knew as little about the breeding of the stock they shipped as the stock knew concerning them, neither having ever seen the other, the selection and shipment of such stock having generally depended solely upon the judgment and integrity of some irresponsible go-between, to whom, as the lowest bidder for the contract, the purchase and shipment of the stock was intrusted by the dealers, who were largely engaged in filling such orders.

A Duroc breeder, and would-be authority on red hog matters—F. D. Curtis, of New York—claims in the *Agriculturist* of March, 1884, that The Duroc-Jersey Association invites all red hog interests, including those of New Jersey breeders of Jersey Reds, and New York breeders of Durocs, upon a foundation broad enough for all. It would be interesting to New Jersey breeders (never represented in this Duroc-Jersey movement) at least to know from whence this oracle secured such information, since the unanimous conclusion here is that the original innovation, of giving their Duroc branch or twig (if twig it be) precedence of our Jersey trunk, in this wonderfully ingenious Duroc-Jersey genealogical tree, or herd book, as well as Mr. C.'s (self-gratulatory) closing remarks in said article, wherein he most sagely asserts that these "hogs are now in the hands of men of character and experience to perfect the breed, and push it well to the front" are, one and all, better calculated (and possibly intended) to repel us from than attract us to this wonderfully broad platform—had not its great breadth already condemned it with all home breeders of improved Jersey Reds, who fail to understand wherein any advantage can accrue to them or their customers in joining an association which includes within its registrations divers breeds and their crosses, most of which certainly cannot show any legitimate claim of consanguinity with the improved Jersey Reds, as now bred in New Jersey, to which *alone* is due whatever of excellence the red hog has ever attained.

New Jersey breeders, and those of other States who desired to perpetuate that excellency, realizing that such proceedings upon the part of unscrupulous parties and their innocent dupes, if unchecked, must eventually result in bringing all red hog stock into disrepute, met in Camden, New Jersey, pursuant to call, on January 31st, 1884, and

upon due consideration determined, "that the only effectual method by which such pernicious results could be averted in the future, and the purity of the breed and its continued improvement assured, was by a thorough organization of breeders." When the National Jersey Red Swine Breeders' Association was founded and incorporated, with a herd book duly provided for, in which only the *very choicest* specimens of the breed, of known purity, and as passed upon by judges appointed from among the members of the Association, will be admitted to record therein as foundation stock until March 1st, 1885, when none but the offspring of such recorded stock shall be eligible to record.

With a membership already including the most progressive and skillful breeders and a registration of the best strains of the breed extant, the success of the Association is already assured, so that we now confidently hope, through organized and, hence, better-directed effort, to hereafter secure much more rapid improvement of this breed than under the circumstances heretofore existing was possible. This, in combination with the original local factors of appropriate feed and climate still existing, and duly seconded by a skill only attainable through keen competition from abroad and local rivalries at home, continuously fostered and strengthened by that most fastidious hog market, Philadelphia, at our immediate doors, must continue to make the breeding of swine here a leading and profitable industry, not for pork alone, but in the rearing of choice breeding stock for improving the swine of all other localities less favorably circumstanced.

CLARK PETTIT,

Sec'y N. J. R. S. B. Ass'n.

Salem, N. J., January 31, 1885.

Agricultural and Horticultural Societies.

Officers', Exhibition, Society and Crop Reports.

ATLANTIC COUNTY.

ATLANTIC COUNTY BOARD OF AGRICULTURE.

OFFICERS FOR 1885.

President.....THOS. ROGERS.....Hammonton.
Secretary and Treasurer.....Z. U. MATTHEWS.....Hammonton.

BOARD OF DIRECTORS.

M. C. SWIFT, E. ADAMS, A. S. GAY, A. SOMERBY,
C. C. STUART, J. P. PATTON, S. H. TYLER.

Delegate to State Board.....Z. U. MATTHEWS.....Hammonton.

Annual fair at Hammonton in September.

ATLANTIC COUNTY SOCIETY AND CROP REPORT,

BY Z. U. MATTHEWS.

Our Society has a name to live, but is practically almost dead; this is owing, largely, to the peculiar condition of our farming interests; in the lower part of the county they grow, largely, truck for Atlantic City market, with some grain and grass, and give a good deal of attention to their salt meadows.

In Egg Harbor, their attention is mostly given to grape culture. They have their own local society which absorbs largely their interests. In the western part of the county there is considerable general farming, with fruit culture on the increase.

Hammonton, which borders on Camden county, is the largest and most prosperous settlement of farmers in the county. Fruit culture receives almost their entire attention. They have a local organization which, in some respects, bids fair to rival any in existence. It is known as the "Fruit Growers' Union and Co-operative Society," organized and incorporated under the laws of the State. They own nearly four and one-half acres of land located between the two rival railroads (Reading and Pennsylvania), with a good dwelling

house thereon, and last season they built a large store-house, 84x48, two stories high; they have a siding from the Reading railroad running across their lot close to the store-house.

All their fruit packages are bought in car lots and stored in the building until wanted; they have a coal yard stocked with all kinds of coal; they keep a full stock of feed, flour, groceries, farming implements and different kinds of fertilizers. Their fruit is shipped from their own siding to New York, Boston, Providence, Newark, Philadelphia, Pittsburgh, and other cities. They employ their own shipping clerks, and men to load cars and unload empties. They also furnish each day to each member (sending out by boy, on bicycle and horse) a printed slip containing dispatches from the different markets of the price that day, thus keeping the grower fully posted as to the state of the different markets. To meet all these, and other expenses, and to purchase and pay for their valuable property, they have never taxed their members one cent. They assume the position of local agent for all the commission houses they do business with, and require these houses to pay into their treasury two per cent. on the gross sales of all their members; this, with other savings they are able to make, enable them to meet all their expenses, and have a nice balance for a dividend (either in cash or stock) each year. When the dividend is made in stock, certificates are issued which bear interest at the rate of six per cent., payable annually. Dividends from profits on shipments and dividends from profits on sales are made separate. They have now over 200 members, and thus far have met with great success. This organization absorbs largely the interest of the farmer in that part of the county. The county being thus divided up into settlements with somewhat diverse interests, it is going to be quite difficult to make a county organization what it ought to be.

The crops in the county the past season, on the whole, have been fair. Early potatoes, fair; late potatoes, good; sweet potatoes, very poor crop; corn, good; wheat, fair; rye, fair; grass, good; salt hay, good; black grass, poor in quality; turnips, very poor; carrots, medium; peas, good crop, fair price; apples, medium crop, very low price; grapes, good crop, low price; strawberries, fair crop, fair price; raspberries, fair crop, very low price; blackberries, fair crop, fair price; cranberries, medium crop, high price.

D. U. Brown, of Elwood, reports as follows: Early potatoes, 100 bushels per acre; late potatoes, 200 bushels per acre; corn, 50 bushels per acre; wheat, 20 bushels per acre.

The Early Wilson blackberry is still leading all other fruits cultivated in the county. Many hundred of acres will be set to this fruit the coming season. Its adaptness to our natural soil without any fertilizer, its great carrying qualities, its size and earliness, and the increasing demand for it, all combine to make it very popular in this section. The Bartlett pear has proved very profitable for two successive seasons, and is fast gaining in popularity. In my last report I paid considerable attention to the "incubator industry," which was growing in interest in the county. The ladies are taking hold of this business with a good deal of success; two young ladies of Hammon-ton had successfully hatched, by the means of incubators, up to the middle of February, 1,200 chicks, all doing well. It looks now that the price of early chickens will be very much reduced the coming season.

Am sorry I am not able to make you a better report, but my time has been so fully occupied in other matters that I could not give this the attention it deserves.

EGG HARBOR CITY AGRICULTURAL SOCIETY.

OFFICERS FOR YEAR 1885.

<i>President</i>	PHILIP BERGMAN.....	Egg Harbor City.
<i>Vice-President</i>	GEORGE FREITAG.....	Egg Harbor City.
<i>Secretary</i>	VALENTINE P. HOFFMAN.....	Egg Harbor City.
<i>Treasurer</i>	WILLIAM BEHNS.....	Egg Harbor City.
<i>Librarian</i>	LOUIS YOUNG.....	Egg Harbor City.

BOARD OF TRUSTEES.

JOHN C. BAAKE, FREDERICK FEIDLER, PHILIP STEIGAUF.

Delegate to State Board..... V. P. HOFFMAN..... Egg Harbor.

Annual fair, Egg Harbor, fourth week in September.

BURLINGTON COUNTY.

BURLINGTON COUNTY BOARD OF AGRICUTURE.

OFFICERS FOR YEAR 1885.

<i>President</i>	JOHN E. DARNELL.....	Mt. Laurel.
<i>Vice President</i> ..	EMMOR ROBERTS.....	Fellowship.
<i>Secretary</i>	HENRY I. BUDD.....	Mt. Holly.
<i>Treasurer</i>	ISAAC FENIMORE.....	Mt. Holly.
<i>Delegate to State Board</i>	ALFRED SATTEETHWAIT.....	Crosswicks.

BOARD OF DIRECTORS.

JOSEPH WILLS.....	Rancocas	Burlington Co. Agr'l Society.
SAMUEL C. DE COU.....	Moorestown.....	Moorestown Agr'l Society.
MARK H. BUZBY.....	Masonville.....	Mt. Laurel Farmers' Club.
DAVID T. HAINES.....	Medford	Medford Grange.
JAMES LIPPINCOTT.....	Mt. Holly.....	Mt. Holly Grange.
JOSHUA HOLLINSHEAD.....	Hartford	Moorestown Grange.
ROBERT TAYLOR.....	Columbus	Columbus Grange.
EDWIN SATTEETHWAIT	Crosswicks.....	Crosswicks Grange.
JUDSON C. GASKILL.....	Pemberton	Pemberton Grange.
EDMUND COOK.....	Burlington.....	Edgewood Grange.
JOSEPH LUNDY.....	Rancocas	Rancocas Grange.

The society has held two meetings, but, aside from collecting crop reports, has not succeeded in awakening much interest among the farmers, this probably owing to the numerous sub-organizations, such as granges and agricultural societies, engaging all the time allotted for agricultural meetings.

BURLINGTON COUNTY SOCIETY AND CROP REPORTS.

BY HENRY I. BUDD.

This may be recorded as a phenomenal year in the history of the agricultural and horticultural interests of Burlington and adjacent counties.

Good crops have been the rule, poor ones the exception, nature has

done well in filling our receptacles with the richest products of this section. A condition that should indicate an extreme of prosperity for the industrious tiller of the soil; but low prices have reduced profits not only to a minimum, but placed many crops below the cost of raising and marketing. This is notably so with apples and the staples wheat, corn and pork. The great law of supply and demand is so disarranged, the markets of the world will not absorb enough of the surplus to keep the wheels of production in healthy motion.

The season as a whole has been a favorable one for the growth and maturity of most of the cultivated crops. Plenty of rain-fall during the summer months, with a mean temperature of about seventy-one degrees, pushing vegetation steadily forward, producing plenty of pasturage and bringing all crops to the time when dry weather was needed for maturing, the which September furnished, being almost totally devoid of moisture, checking the growth of the standing grasses, drying and curing their juices, making them short and exceedingly nutritious. These favorable atmospheric conditions during September matured the best ripened corn crop realized for years, leaving but a trifle of offal, and even that was dry and hard; also perfected a crop of the best matured and most nutritious corn fodder ever gathered in our county. The dry, pleasant, Indian summer, like autumn, absence of high winds and heavy beating rains, allowed the storing of it away bright and clear, with little loss of leaves. Then the practice which now generally prevails with us, of binding it in sheaves and storing it in ricks, is making it one of our most valued winter foods, supplementing and almost taking the place of hay for horses and cattle.

The same atmospheric conditions prevailed with but slight moisture well into October, keeping the ground during the sowing period so hard and dry as in many instances to prevent its preparation for winter grain. The consequence was, that only in exceptionable favorable localities the farmers were late in seeding, and many were entirely prevented, thus shortening the area, and where sown presenting a scanty appearance. On warm soils the open season is in a measure remedying this defect, and the anomaly was presented through this winter up to this present cold spell, of hundreds of fields each day growing greener.

The reports of the wheat yield thus far received, although meagre on account of the low price deterring the threshing, gives an average

of about twenty bushels per acre, and this in face of the fact that the fly has more or less affected nearly all sections of our county, while low lying, loose, vegetable-mould soils gave the smallest returns for years on account of the excessive moisture and frequent changes of temperature during February and March, and consequent freezing and thawing, throwing out the roots of the plants. Much better crops have come from land preceded by potatoes and tomatoes than by corn or oat-fallow. The largest yields have resulted where artificial fertilizers supplemented the home-made or stable manures, bringing some yields as high as thirty-three and forty-five bushels, and one crop, the Treadwell variety, up to fifty bushels per acre. Among the new varieties tried during the past year the Treadwell excels in yield. Of the old varieties, the Fultz still leads in the quantity produced per acre, and the quality surpasses that of last year, thus restoring the prestige it promised to lose last year, by its indifferent yield and condition. The millers discourage its growth and contend it is a great factor in preventing them from bringing their flour up to the average of the Western manufacturer.

Jacob Leeds reports 8 acres of wheat, after corn, 29½ bushels per acre.

Jacob Leeds reports 350 bushels on 8 acres of wheat, after potatoes, 43½ bushels per acre.

Jacob Leeds reports his Treadwell averaged 45 bushels per acre.

Robert Evans reports 6 acres of wheat, 24 bushels per acre.

George Evans reports 6 acres of wheat, 33 bushels per acre.

Joshua Huston reports 20 acres, 452 bushels, 22½ bushels per acre.

Corn.—The average will range from 40 to 50 bushels per acre, although crops are reported of 130, 120 and 108 bushels per acre, the manner of raising given in Mount Laurel Club report.

Rye has been a good crop, running as high as 40 bushels per acre, the average ranging from 15 to 20 bushels per acre. The grain has been supported by a good crop of straw, from 1 to 1½ tons per acre, which has this year sold in our Philadelphia markets at \$20 per ton. This, added to 60 cents a bushel for the grain, brings a minimum gross result of about \$30 per acre—better than 20 bushels of wheat, at 90 cents, \$18 per acre. The consequence is, farmers are reducing their acreage of wheat and increasing that of rye.

Oats are not generally grown in our county, as the practice prevails of sowing winter grain after corn, potatoes, tomatoes and other vege-

table crops, instead of, as formerly, oat-fallow. Where sown they were fairly good crops, but much damaged with the frequent rains at harvest time. The crop presents an average of about 30 bushels per acre. Frank B. Warner, near Mount Holly, by the use of 200 pounds Swift Sure phosphate per acre, succeeded in raising on 5 acres 325 bushels of oats, or 65 bushels per acre.

White Potatoes.—The phenomenal yield of last year was not generally realized this. Several crops of 200, 172, 316 and 394 bushels per acre are reported. Jacob Leeds raised, of one variety, at the rate of 900 baskets per acre, and one neighborhood, Moorestown, reports an average result of 172 bushels per acre, but the average for the county will not much, if any, excel 150 bushels per acre. In some sections damaged with insects. The price has been unprofitably low.

Sweet Potatoes were two-thirds of a crop, of an average quality. The best found a ready market at from 50 to 60 cents per basket, or \$1 per bushel.

Hay was a medium crop, poor on old sod; first year's cutting good where well set; price fair, ranging from \$12 to \$18 per ton.

Pasturage in great profusion until the 1st of September, after which short, but very nutritious; overstocked farms at this period; had to resort largely to green corn fodder and wheat bran to supply the needs of their dairy cattle.

Apples.—A very large crop, the newer varieties being the most prolific. The Baldwin, Willow Twig, York Imperial, York Stripe, Ben Davis, Yellow Transparent, Beauty and William's Favorite having borne and sold well in the market.

The prices realized have been low and the crop generally unprofitable. Some large ones near Philadelphia market realized 25 cents per basket or about 50 cents per bushel, but the major part went to the cider mill, with the result of cider being so plenty it found a slow market at from 6 to 8 cents per gallon, consequently was largely distilled, and now rests in farmers' cellars in the shape of apple-jack or Jersey lightning.

The repeated unprofitableness of Burlington county orchards are inducing many to neglect their cultivation. Three years of almost

total failure, then one year of plenty, beyond the power of consumption, consequent inability to realize enough price to pay for picking. Twelve cents a bushel will not pay the cost of gathering and carting to the cider mills.

Joseph E. Roberts sent 1,400 baskets of apples to Philadelphia market.

Joseph E. Roberts sent 500 baskets to cider mill.

Enoch Dudley sent 1,820 baskets to market.

Enoch Dudley sent 480 baskets to cider mill.

Elwood Hollinshead sent 4,000 baskets to market and mill.

Average market price, 25 cents per basket.

Kirby & Bro., near Medford, made into cider 15,000 bushels of apples; realized 52,500 gallons of cider, or $3\frac{1}{2}$ gallons per bushel—one gallon for manufacturing, $2\frac{1}{2}$ gallons to the farmer. Their share, 15,000 gallons, they sold at an average of 6 cents per gallon.

Peaches were a fair yield, of moderate quality. Brought good prices. If trees could be preserved more than three years in a healthy and bearing condition, they could be reckoned among our profitable crops.

Pears were a full crop; fruit fine and brought good prices; blight more prevalent than last year.

Grapes were a large crop, but sold for low prices.

Raspberries, Blackberries, Strawberries and Cherries were all good crops. The early varieties were much injured by drought and hot sun in June. They all sold for fair prices.

Cabbages.—Early crop nearly fair, but the later planted almost a failure, on account of worms and drought in September. Earliest sold for \$2.50 and \$3 per 100, some of the later only for 50 cents per 100.

Tomatoes.—Not a full crop, but nearly up to the average; realized unremunerative prices except where raised by contract for canning establishments.

Melons.—A moderate crop; sold for very low prices.

Cranberries.—Two-thirds of a crop of berries; fine; have been and are selling for handsome prices.

There has been the usual abundance and variety of insect life, destroying, defacing and deteriorating large quantities of fruit, almost denuding the plum trees, but with other varieties nature has been prolific enough to furnish plenty for both insects and humanity.

Poultry has this year been a large and healthy crop; scarcely any cholera reported, but the market has been dull and prices realized below the average of former years. Farmers generally stock with from 30 to 50 hens. The effort is to raise and market all the early chickens they can and catch the large prices for spring broilers. Some are trying incubators, but as yet with no brilliant results.

Hogs.—In some sections of our county much attention is given to the raising and fattening large crops of pork, nearly all the corn and rye raised on the farm finding markets through this medium. In the neighborhoods of Pemberton and Vincentown the desire for raising hogs has received a check from the virulence of the hog cholera, which has destroyed whole crops and decimated many others. Much speculation has been indulged in as to its cause and cure, but veterinaries have not as yet settled upon a cause or discovered an infallible preventive, as it occurs under all conditions and with all kinds of feed.

The fattening of calves through sucking the cows is a large industry in this county, and has been this year, compared with other economies of the farm, productive; for the price of veal, like that of beef, has been well maintained.

The production of milk for the sea-shore, Philadelphia and Camden markets is increasing and has been for a portion of the past year beyond the power of consumption, yet the price, despite the general depression, has been scarcely one-half cent below that of previous years. The profit has been but a trifle less, as pasturage has been abundant, and bran, corn and other cow feeds cheap.

The average results from cows for both milk and butter are about \$60 per head; from fattening calves, from \$30 to \$35, with very much less labor.

Creameries.—Hartford is the only one that has been running this year in our county, and this only during the summer months, while the pasturage was abundant. The low price of cheese has prevented its manufacture and confined Hartford's production to butter and cream.

Silos.—Since our last report there has been a small increase in the number of silos, and they generally report satisfactory results. Chas. Taylor says, "It answers as no other feed that I have tried will do in producing an extra grade of milk. After several years of trial, I am still an earnest advocate of its use."

David Roberts, of Moorestown, has recently built and filled one. He claims a great saving of fodder; his milk is richer and sells more readily; feeds about one bushel per day to each cow; feeds less corn meal than when he fed on hay and corn fodder; cows are looking and milking as well as when pasturing on grass.

James Lippincott, after four years' experience with ensilage, is very enthusiastic over its superiority to other winter foods. More economical, makes more and better milk, cows look well and are healthy; has cut and crushed corn fodder, mixed it half-and-half with cut hay, then steamed and mixed with middlings and cotton-seed meal, but ensilage mixed with the same amount of middlings and cotton-seed meal will beat it one-third, both in quantity and quality of milk; can show from twenty to twenty-five per cent. of cream from cows fed on ensilage. Who can make a better showing from other kinds of food?

John Logan, farmer for Wm. S. Taylor, says: "In my itemized report to your board last year, I advocated the growing of ensilage in rows three feet apart. I remain of the same opinion, as I tried thirty acres, two feet apart, and, although I manured and cultivated the ground well before planting, I did not get as much as I have the past year from twenty acres planted three feet apart in rows and cultivated well all through the season. Planted two feet, it grows fine and short; planted three feet it grows eight to nine feet high. Three men in the field cutting with stalk-knives can keep the engine and cutter steadily employed. Do not think it requires as much weighting as some writers advocate. To have good ensilage requires quick filling, and covering immediately. This year I was at no time longer than two days filling one pit, the result is our ensilage is coming out as green as when put in the pit, and almost as sweet, which is essential to proper nutrition. Previously we have been a number of days filling, and before we covered the temperature would reach, at times, 140 degrees. The ensilage would become bleached, mow-burnt, pale in color, odor sharp, and in my opinion not good for cattle. Our ensilage costs us about \$1 per ton to grow and put it away; this does not include interest and taxes on the land. I am an earnest advocate of

green-soiling in summer, but am in doubt about the practical value of ensilage to the farmer. I think I would prefer thirty acres of corn, 1,500 bushels, and the resultant corn fodder, than thirty acres of ensilage. It makes more milk than dry fodder, but no more butter; it requires just as much grain of all kinds as hay or dry fodder, the only difference in its value is the amount in value of hay it saves over the amount in value of the ensilage used. Then, if it shows a saving, whether it is not at the expense of the health and condition of the cow is a question I have been unable to satisfactorily solve."

FORESTRY.

Much has been and is being written about the necessity of adopting a broad and liberal policy, leading to the cultivation and preservation of our forests. But like all movements for the correction of bad habits and the advancement of humanity, there must be constant iteration of the basic facts, continual appeals to our legislators for enlightened and sweeping forestry laws, continual education of the people to the necessity of such laws, until the desire for the enacting and enforcement of them becomes so great that all will concentrate their energies to re-clothe our barrens with their virgin growths, and thus restore and preserve the healthful and beautiful in nature, and contribute untold millions of wealth to posterity.

Following will be found communications from individuals, clubs, granges and agricultural societies. Statements of large crops of hogs and poultry will, when marketed, be received, probably in time for publication in your annual report. In the Directors' and Treasurer's report of the Burlington County Agricultural Society, will be found a full account of the proceedings of a very successful year.

The following table was prepared by Thomas J. Beans, of Moorestown, N. J.:

TEMPERATURE AND RAIN-FALL, 1884, BURLINGTON COUNTY, N. J.

	Max.	Min.	Mean.	Rain (inches).	Snow (inches).	Remarks.
January	46°	0.5°	25.55°	4.36	10	
February	66°	8°	36.63°	5.33	1	
March	63°	8°	38.64°	4.64	4.5	
April	74°	32°	47.85°	1.65	.....
May	90°	44°	60.43°	3.29	.....	{ No frost to harm strawberry blossoms during month.
June	94°	45°	69.62°	3.52	.....
July	92°	62°	72.08°	3.775	.....
August	93°	48°	71.4°	5.075	.....
September	94°	47°	68.85°	0.16	.....	Relative humidity, 74.06°.
October	83°	30°	55.44°	2.29	.....	Relative humidity, 76.03°.
November	64°	17°	41.25°	3.40	.....
December	64°	2°	32.97°	5.37	.....

For the year 1884, temperature, mean, 57.72°; rain, 42.86 inches; snow, 21½ inches.

Deadly general frost October 26th, closing season for outdoor growth of tender vegetation. The mean temperature for the summer months was 71.03°. The mean temperature for the summer months for eighteen years, 73.22°. The mean temperature for September, 3.79° above mean for eighteen years. The rain-fall for September, 3.56 inches less than for eighteen years. The mean relative humidity for September, 74.06°, being 4.05° above mean for years. The rain-fall for the year, 42.86 inches, very nearly the average for twenty years.

Moorestown Grange reports they occupy a large area with hay and the cereals, but on account of proximity to market, the cultivation of vegetables and fruits of a perishable nature is increasing and, notwithstanding the large amount in bulk sold from the farms each year, their fertility perceptibly increases.

Large quantities of fertilizers are consumed; many using the different standard brands, others buying the ingredients and mixing them at home with very satisfactory results. Dissolved rock or bone, muriate of potash, and nitrate of soda being the leading ingredients. Large quantities of stable manure are also used; formerly it came from Philadelphia, now it is carried by cars direct to or near our farms from New York city. This is of excellent quality, and has but one drawback, viz., sometimes is weighted with too much Croton. Our best results are obtained by mixing the stable and manufactured fertilizers together before application, or applying the first broadcast, the latter in row or hill.

The tendency is to have married farm laborers board themselves. One dollar per day and house rent, without board, are the common wages in our jurisdiction.

No. of acres in farms, 3,400; average acreage of farms, 110.

"	"	corn, 525; average per acre, 54 bushels.
"	"	wheat, 475; average per acre, 30 bushels.
"	"	potatoes, 197; average per acre, 175 bushels.
"	"	sweet potatoes, 200,000 sprouts.
"	"	citron, 42; average, \$95 per acre.
"	"	tomatoes, 20; 600 to 1,000 baskets per acre.
"	"	cabbage, 91; average, \$100 per acre.
"	"	sugar corn, 144; per acre, \$50.
"	"	strawberries, 50.
"	"	peaches, 25.
"	"	grapes, 30.
"	"	hay, 875; per acre, 1½ tons.
"		horses, 120.
"		mules, 97.
"		cows, 368; average realized per head, \$45.
"		hogs, 300.

Medford Grange reports sixty-four members. Meets every week; is harmonious, and in good working order. Our co-operative store has a capital of \$400, does an annual business of over \$2,000, exclusive of buying machinery, stock, grass seed and coal.

No. of acres in farms.....	2,311½
" " pasture.....	357
" " hay.....	547½
" " corn.....	399
" " wheat.....	180
" " rye.....	286
" " oats.....	21
" " potatoes.....	62½
" " fruit.....	74
" cattle.....	318
" horses and mules.....	99
" hogs.....	730
" sheep.....	369
" calves.....	465
" pounds of butter.....	4,570
" quarts of milk.....	132,923
" poultry.....	9,554

No. of bushels of cranberries.....	4,000
“ acres of grapes.....	6
“ baskets of peaches.....	150
“ baskets of grapes.....	30
“ acres of apples.....	180
“ “ cabbage.....	8
“ “ strawberries.....	16

Five members not reported; the butter product only partially given in; one member sold from a ninety-two acre farm staple products amounting to \$2,315.49.

REPORT OF MOUNT LAUREL FARMERS' CLUB, 1884.

The Club offered premiums for the best crops of corn and potatoes.

They awarded the first premium for corn to Samuel R. Lippincott, of Hartford, N. J., for crop of gourd-seed corn planted on an old meadow and fertilized with 80 pounds per acre of Lister Bros.' bone; planted with Hoosier corn-drill in drills 4 feet apart and 16 inches apart in the row, one stalk in a place; planted May 10th, and farmed with Randall disk harrow and plowed twice with one-horse plow; yield, 120 bushels, of 72 pounds, per acre.

Joseph H. Haines, of Medford, reports a crop of Leaming corn grown on sandy loam; sod ground, manured with barn-yard manure and gas lime before plowing; planted about the 10th of May, in drills 4 feet apart, 12 inches apart in the row, one stalk in a place; yield, 108 bushels per acre, of 72 pounds per bushel; farmed with one-horse plow and cultivator.

Alfred Budd, of Buddtown, reports a very large yield of Cloud's Dent corn, grown on dark sandy loam; sod manured with barn-yard manure; planted in hills $4\frac{1}{2}$ feet apart; yield, 130 bushels per acre, of 72 pounds per bushel.

We think the crop of corn in this section was a full average—supposed to be about 60 bushels per acre.

The crop of wheat was a fair average crop, about 25 bushels per acre.

Granville W. Leeds, of Rancocas, reports his crop of $5\frac{1}{4}$ acres of Fultz wheat, yielding 44 bushels per acre, and Treadwell, $2\frac{1}{4}$ acres, yielding $44\frac{1}{2}$ bushels per acre; planted October 6th, after corn and potatoes, with 500 pounds of J. J. Allen's Sons' nitro-phosphate per acre.

Charles Edgerton, $2\frac{1}{2}$ acres of Treadwell wheat; sown about October 10th; 500 pounds of fertilizer per acre; yield, 124 bushels, or nearly 50 bushels per acre.

Potatoes, a good yield, Early Rose being the favorite variety.

Granville W. Leeds reports $3\frac{3}{8}$ acres of six varieties, yielding nearly alike, the Bell being the least and the Prince the largest; yield, $1,333\frac{1}{8}$ bushels, an average of 394 bushels per acre; planted about April 17th, in drills 2 feet 9 inches apart, with 600 pounds of Allen's phosphate per acre.

Joshua Hollinshead, of Hartford, reports 4 acres of Early Rose, yielding 1,266 bushels, averaging 316 bushels per acre; planted in drills 3 feet apart, with a fertilizer (formula not given).

COLUMBUS GRANGE, No. 58, P. OF H.

REPORT OF THE FARM AND STOCK COMMITTEE.

The following is from 18 out of 30 farms in our jurisdiction. These 18 farms possess a total acreage of 1,696 improved, and 160 unimproved land; average per farm, 103 acres. Number of horses, 60; mules, 13; average, 4 to each farm. Cows, 261; sheep, 176; only five farmers keep sheep; hogs and pigs, 306. Total money value of poultry, \$4,375. Acres in wheat, 210; 3,633 bushels; average per acre, 17.3 bushels. Rye, 61 acres, 918 bushels; average, 15 bushels. Corn, 314 acres, 16,420 bushels; average, 52 bushels. Oats, 48 acres, 1,844 bushels; average, 38 bushels. Irish potatoes, 25 acres, 3,650 bushels; average, 146 bushels. Sweet potatoes, 6 acres, 560 bushels; average, 93 bushels. Total value of butter, \$2,401; milk, \$5,324; calves, \$3,253; average per cow, \$42. Apples, value \$1,099; peaches, \$188; pears, \$157; strawberries, \$256; mellons, \$209; citrons, \$131. Tomatoes, $9\frac{1}{2}$ acres, amounting to \$896; average per acre, \$94. Pickles, 7 acres, amounting to \$787; average, \$112 per acre. One farmer had 762 bushels of pickles on two acres, which were sold for 45 cents per bushel; total, \$343; average, \$171 per acre. Sweet corn, 26 acres, amounting to \$1,001; average, \$38 per acre. Hay, 376 acres, 448 tons; average, nearly $1\frac{1}{4}$ tons per acre. Total amount of pork fattened, \$3,667. Other truck, pumpkins, 2 acres, \$30; cabbage, $1\frac{1}{2}$ acres, \$126; Lima beans, $\frac{1}{8}$ acre, \$25; asparagus, $\frac{1}{2}$ acre, \$39.

Poultry-raising seems to be one of the most profitable products of the farms, notwithstanding the disease which prevails to some extent in this section.

The dairy also receives considerable attention ; nearly \$11,000 worth of butter, milk and calves sold off of 18 farms. '

Crosswicks Grange, No. 61, reports their membership, condition of grange, farms and crops about the same as last year.

Mount Holly, Pemberton and Rancocas Granges are not very active, but possess many elements of strength. Their ambition is not sufficient to induce them to make up reports for either county or State Boards of Agriculture.

Mount Laurel Grange has ceased to exist, having surrendered its charter.

Moorestown Agricultural Society's report will appear in the printed proceedings. On account of their annual meeting being held this week, their report does not appear in time for this meeting.

RANCOCAS, 1st month 26th, 1884.

Henry I. Budd, Mount Holly, N. J.:

RESPECTED FRIEND—In reference to my shipments of poultry and account of my farm crops, raised on my farm in Westhampton, at thy request, I submit the following short summary, viz.:

From 12th month 9th, 1884, to 1st month 14th, 1885, I shipped to the New York market 41,600 pounds of poultry ; for the year 1884, nearly 300,000 pounds ; for the Christmas market I made my heaviest shipments, when, from 12th month 17th to 22d inclusive, I sent 19,650 pounds, which, owing to the lower prices ruling, was not so heavy as it has been in former years. From some cause, early in the season, the poultry generally was poorer than I usually get, but at present it is running pretty well up to the standard which our poultry has attained in New York, where it commands the highest prices of any poultry going in, although the difference in the price of Burlington county and Western poultry is not so great now as a few years ago ; the Western poultry raisers, having taken more interest in it the past year, are shipping poultry East that compares favorably with

ours, and I suggest that our farmers should try to improve, where it is possible, in fattening and dressing their poultry.

Of my farm crops, I will give you but a brief account of potatoes and wheat :

I planted $3\frac{1}{2}$ acres of potatoes and raised 2,000 baskets, one variety yielded at the rate of 900 baskets per acre. I used stable manure broadcast and Allen's fertilizer in the row. On 8 acres of land I raised 350 bushels of wheat, average, $43\frac{1}{2}$ bushels per acre. Treadwell averaged 45 bushels. On this ground manure was used broadcast on the spring crops, but none in the fall. I used Allen's phosphate, which was drilled in with the wheat.

Respectfully thine,

JACOB H. LEEDS.

POULTRY.

Jacob H. Leeds, Rancocas, shipped nearly 14,000 pounds of handsome Burlington county poultry to New York last week, and, from present prospects, will ship equally as much the present week. Among those bringing in the largest and finest lots were Howard G. Taylor, Riverton, over 400 pounds pullets, averaging 12 pounds per pair; Ezra Scattergood, Bustleton, 500 pounds pullets; Frank S. Zelley, Jacksonville, 700 pounds; R. C. Ballinger, Jobstown, 900 pounds; Wm. Nippins, Mount Holly, 500 pounds fancy roosters and capons, some weighing 24 pounds per pair; Isaiah E. Atkinson, Mount Holly, 622 pounds fancy capons, averaging 18 pounds per pair; A. S. N. Johnson, Mount Holly, 842 pounds pullets; Frank B. Warner, Jacksonville, 654 pounds fancy capons, some weighing 23 pounds per pair; Joseph C. Dudley, Mount Holly, 424 pounds fine roosters; Mrs. Marietta Bowne, Mount Holly, 580 pounds poultry; Stacy H. Stevenson, Burlington, 796 pounds capons, averaging 9 pounds each (8 of them weighed 92 pounds, one pair 25 pounds); Aaron B. Stiles, Mount Holly, 458 pounds of fine roosters; George M. Lippincott, Moorestown, handsome lot of pullets; Isaiah E. Atkinson, Mount Holly, 622 pounds of handsome capons, averaging 19 pounds a pair, and Henry D. Fenimore, Lumberton, a choice lot of pullets.

Heavy shipments of poultry were made by Jacob H. Leeds, Rancocas, the past week, exceeding the previous week's shipments, when he shipped nearly 14,000 pounds. Among some of the fancy lots were 438 pounds of pullets from Edward Hultz; Ellis C. Rogers, 431 pounds extra large capons; John A. Potts and Samuel R. Stiles,

all from near Mount Holly, fine lots of capons; C. Frank Gaskill, Rancocas, handsome lot of roosters; Charles Hancock, Burlington, fancy lot of capons; Benjamin S. Colkitt, near Mount Holly, 781 pounds fancy turkeys, and 700 pounds chickens, amounting to \$232; Clayton M. Haines, Masonville, had a fine lot of chickens, &c. On Wednesday the receipts amounted to nearly 6,000 pounds.

On Monday, A. K. Dubell, of Columbus, received of J. Elwood Hancock, Springfield, 90 capons, averaging a little over $9\frac{1}{2}$ pounds.

On Wednesday last J. Abrahams & Son, of Red Lion, shipped from Vincentown, 5,000 pounds of very fine poultry. It was received in lots as follows: A. Budd, 650 pounds; George H. Gaskill, 600 pounds; John Early, 400 pounds; Abner Rogers, 400 pounds. Among the lot was about 1,000 pounds of extra fine capons.

Jacob H. Leeds, Rancocas, is still receiving some large lots of fine poultry, among the finest lots that were received the past week were the following: B. M. Richardson, Mount Holly, 1,292 pounds of fancy chickens; Edward E. Logan, Mount Holly, 750 pounds; W. Darnell, Masonville, 463 pounds fancy capons; M. S. Haines, Rancocas, 825 pounds fine chicks; Howard G. Taylor, Cinnaminson, 510 pounds handsome pullets. John G. Cook, of Jacksonville, delivered one of the finest and most uniform lots of capons received this season, 99 heads, averaging 19 pounds per pair, and not a poor one in the lot. Silas Walton of Moorestown, sent in a very handsome lot of roosters, 390 pounds; and A. S. H. Johnson, of Mount Holly, sent 1,037 pounds of fancy capons.

J. Elwood Haines, of Jacksonville has sold to J. P. Zelle, Florence, 149 capons weighing 1,809 pounds; 150 weighed 1,500 pounds, and numerous pairs weighed from 24 to 26 pounds per pair.

HOG RAISING.

On Tuesday, Frank B. Warner, of Springfield, delivered to a Camden butcher, 9 spring pigs that averaged $232\frac{1}{2}$ pounds. On his small farm he has fattened this year 5,392 pounds of pork.

On Monday, Elijah W. Haines, living near Vincentown, shipped to Philadelphia thirty-seven spring pigs that averaged 291 pounds. This is the finest lot of pigs shipped from this section this winter. He received \$6.25 per cwt.

On the 3d inst., William T. Irons, living on Barclay White's farm, near Juliustown, killed the produce of 4 sows, 21 pigs, born April

8th to 21st, 1884. The heaviest weighed 366, the lightest, 306 ; total, 6,938 pounds ; average, 330 pounds.

Stephen W. Bodine has received this week the following lots of pork : 19 hogs from William A. Johnson weighed 8,024 pounds ; 27 from Samuel A. Dobbins, Jr., weighed 8,300 pounds.

Williams S. Gratz, of Jobstown, on Thursday killed 11 hogs that averaged 455 pounds.

Joseph G. Lippincott, of New Egypt, slaughtered on Monday, 12 hogs that averaged 673 pounds, and 17 pigs, averaging 364 pounds.

Samuel B. Pew, of Springfield township, killed 21 hogs that averaged 485 pounds.

Last week Samuel F. Fowler, of Allentown, killed 21 wintered hogs that weighed, in the aggregate, 11,239 pounds, and averaged 535. The heaviest weighed 675 pounds. He also killed 48 pigs, the total weight of which was 13,984 pounds, averaging 291.

On Thursday of last week, Collen B. Meirs, of Cream Ridge, delivered to John Taylor & Co., of Trenton, 95 pigs, whose average dressed weight was 303 pounds, and 28 hogs which dressed 513 pounds, or a total of 43,176 pounds. This is claimed to be the heaviest lot of pork ever fattened in one season on any single farm in the State. Mr. Meirs also keeps a dairy of 28 cows, which are of full feed any day in the year. All this on a farm of 220 acres. Mr. Meirs' pork crop amounted to \$2,482.62.

Stephen W. Bodine this week received from Budd Atkinson 44 pigs that averaged 280 pounds, and from William H. Woolston, near Medford, 8 hogs that aggregated 3,180 pounds.

Horner Bros., of New Egypt, delivered to John Taylor & Co., Trenton, on February 5th, 13 hogs, averaging 470 pounds ; 35 yearlings, averaging 377½, and 62 spring pigs, averaging 302½ ; total weight, 38,047 pounds, which, at 5½ cents, amounted to \$2,195.20.

Elijah W. Haines, near Vincentown, reports his pork crop for the past year as follows : 81 pigs, weighing 23,490 pounds ; average, 290 pounds ; 14 sows, sold in September, weighing 4,550 pounds ; average, 325 pounds ; 12 pigs, killed December 26th, weighing 2,592 pounds ; average, 216 pounds ; 1 pig that broke down, weighing 288 pounds. Whole amount, 12 sows raised and fatted, 31,000 pounds.

D. Budd Coles, near Lumberton, killed 9 pigs, 10 months old, which weighed 3,002 pounds, an average of nearly 334 pounds.

Samuel M. Southard killed his crop of hogs on Saturday, 7th, and the following are their weights at Cookstown on Monday : 670, 569,

630, 569, 605, 681, 658, 646, 606, 613, 652, 593, 609, 644, 691, 649, 697, 627, 564, 568, 502. Total for the 21, 13,043 pounds, an average of 621 2-21. He also shipped 18 pigs whose average was 211 2-9 pounds. The whole crop was sold to John Taylor, Trenton.

Joseph Carter killed his large hogs on Saturday. The following are the weights on the gallows: 643, 677, 695, 707, 719, 720, 722, 727, 749, 755, 780, 785, 793, 795, 795, 795, 814, 821, 827, 830, 840, 875, 879, 880, 793, 895, 951, 1,015, 1,059.

The prize porker of the lot of thirty, which tipped the beam at 1,059 pounds, is believed to be the largest hog ever raised in the United States. It was 71 inches long, 76 inches in girth, and weighed 29 pounds to the square foot. The next largest weighed 1,015 pounds, and measured 69x69 inches, or was as large around as it was long. The average weight of 20 of the 30, as they were weighed yesterday, was 844½ pounds. The breed was the common Jersey Red.

The New Hanover pork crop was harvested during the past week, Joseph Carter killing his lot on Saturday, and Taylor Devinney slaughtering yesterday. We give the weights of the 20 heaviest, after deducting five pounds for gambrels:

CARTER'S. Green Weight.	CARTER'S. Dry Weight.	DEVINNEY'S. Green Weight.	DEVINNEY'S. Dry Weight.
1,059	1,007	1,079	1,081
1,015	966	1,055	1,004
895	859	1,035	998
880	857	1,025	971
875	848	952	930
840	845	905	864
830	842	872	848
827	806	865	834
821	801	848	812
814	787	845	808
893	786	845	804
879	781	840	802
793	761	825	799
795	760	810	780
795	760	793	773
795	754	780	760
785	745	775	756
788	745	773	754
755	720	771	746
751	715	744	743
16,885	16,145	17,437	16,812

Average, Carter's, green, 844½; dry, 807 2-5. Devinney's, green, 871 17-20; dry, 840 3-5.

In the above are two or three of Carter's and one of Devinney's which were killed before the rest, on account of accidental injuries. Besides these 20, Carter killed 13 other hogs which weighed, dry, 8,578 pounds, an average of 655 2-13 pounds, while Devinney had nine spring pigs, less than ten months old, which weighed 3,915 pounds, an average of 435.

It will be seen by the above that Mr. Devinney retains the championship of the country, the average weight of his lot being over 30 pounds more than last year. And this, too, in spite of the fact that nearly a dozen of his hogs had to be killed during the winter on account of injuries. Mr. Carter, although unsuccessful in obtaining the championship, may well feel proud of a record higher than that of any previous year. These figures are far above anything thought possible a few years ago, but with each year's experience they grow larger, and we shall not be surprised to see still better figures next year.

The hogs were a trifle less than two years old, and were purchased when shotes from different farmers. They were fed liberally on rye and slops till last fall, and since then on cooked corn meal. They were all blind for some time, the flesh having grown over their eyes.

Several hundred people attended the killing on both farms, and were entertained by a brass band, dinner, &c.

A great deal of inquiry has been made as to the final disposition of these mammoth hogs. Carter's were sold to John Taylor & Co., and Devinney's to Margerum Bros., both firms in Trenton. The Carter pork went up East, where it was cut up into meats especially for the French and South American markets.

MISCELLANEOUS.

To convey a knowledge to the numerous readers of the New Jersey Agricultural report, of the value of farm animals and stock in Burlington county, I append the result of several sales held during February, 1883:

John P. Hutchinson has sold his Jersey bull, Duke of Cloverdale (No. 6994), to Clarence Ramsden, of Morton, Pennsylvania, for \$5,000. He also sold six calves at \$300 each.

At John E. Taylor's sale, near Medford, last week, horses brought from \$64 to \$110; cows averaged \$38; hogs, \$4.50 to \$8; geese, \$2.90; ducks, \$1.10; corn, 61 cents; hay, \$15.50 to \$17; stalks, \$3 to \$3.25 per bundle; reapers, \$56; farm wagons, \$76. Farm machinery generally brought good prices.

At the sale of personal property of William R. Hancock, deceased, in Springfield, on Tuesday, a pair of black horses brought \$196 and \$198; bay mare, \$204; pair old mules, \$175; pair young mules, \$250; cows, \$18 to \$55; sows, \$10 to \$12; pigs, \$4 to \$8; chickens, alive, 14 cents per pound; guineas, 45 cents apiece; goats, \$2 each. Wagons and utensils brought good prices. One share Burlington County Agricultural Society stock brought \$48; par value \$10.

At the sale of William G. Lippincott's stock, utensils, etc., on Wednesday, horses brought \$150, \$160 and \$161, and \$332 for a pair; cows averaged \$40; hogs, \$7 to \$20.50; sheep, \$4.50 to \$7.12½; hay, \$15 per ton; corn, 70 cents per bushel; rye, \$8.36 per acre; straw to be left on the place. Machinery sold well.

Prices at sale of Joel Haines, Jr., near Wrightstown, on Monday—cows, \$30 to \$60; hogs, \$3.75 to \$14; horses were not sold; implements low; oats, 42 cents per bushel.

At the sale of Zebedee R. Wills, near Marlton, on Thursday, of Holstein cattle, prices ruled as follows: Calves, four months, \$25 to \$41; yearlings, \$52 to \$64; cows, \$78 to \$93.50; yearling bull, \$98; horses, \$125 to \$127; mules, \$300 per pair.

At Samuel S. Taylor's sale, near Bordentown, a pair of mules and harness brought \$463, and another pair sold for \$394.50; horses, \$142 to \$225; colts, \$57 to \$81; cows, \$40 to \$78; corn, 66 cents per bushel; ewes and lambs, \$5.40 to \$6.10; buck, \$8.50; sows, \$7 to \$13; hogs sold very low.

At the sale of Clayton S. Allen's stock, on the Mount Holly and Rancocas road, on Tuesday, horses brought from \$40 to \$50; mules, per pair, \$199; cows, \$17.50 to \$41; hogs, \$18; pigs, \$3.25; goat, \$2.50; corn, 68 cents per bushel; hay, \$16 to \$17.50 per ton; potatoes, 55 cents per bushel. Machinery sold low.

At the sale of stock, utensils, etc., on Phoebe A. Emley's farm, near Cookstown, on Wednesday, horses brought \$33, \$115, \$127; cows, \$20 to \$61; sows, with pig, \$14.50; pigs, \$4.50 to \$5.25; bull, \$26.50; sheep, \$5.87½; rye, 71 cents per bushel; corn, 69 to 77 cents per bushel; reaping machine, \$60; mowing machine, \$20.

BURLINGTON COUNTY AGRICULTURAL SOCIETY.

OFFICERS AND DIRECTORS FOR 1884.

<i>President</i>	ISAAC FENIMORE	Mount Holly.
<i>Vice President</i>	WILLIAM S. TAYLOR.....	Burlington.
<i>Recording Secretary</i>	JOHN B. COLLINS.....	Mount Holly.
<i>Corresponding Secretary</i>	HENRY I. BUDD.....	Mount Holly.
<i>Treasurer</i>	EDWARD B. JONES.....	Mount Holly.

BOARD OF DIRECTORS.

ISAAC FENIMORE	Mount Holly.
BENJAMIN F. DEACON.....	Mount Holly.
JOHN B. COLLINS.....	Mount Holly.
WILLIAM S. TAYLOR.....	Burlington.
JOSEPH WILLS.....	Rancocas.
HENRY ELLIS.....	Juliustown.
HENRY I. BUDD.. ..	Mount Holly.
WILLIAM R. LIPPINCOTT.....	Cinnaminson.
JUDSON C. GASKILL.....	Birmingham.
SAMUEL H. CHAMBERS.. ..	Mount Holly.
WILLIAM C. PARRY	Hainesport.

FINANCE COMMITTEE.

JAMES LIPPINCOTT,	JAMES W. DEACON,	ROBERT B. ENGLE,
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EXECUTIVE COMMITTEE.

B. F. DEACON.....	Mount Holly.
JOHN B. COLLINS.....	Mount Holly.
HENRY I. BUDD.....	Mount Holly.
JOSEPH WILLS.....	Rancocas.
SAMUEL H. CHAMBERS.....	Mount Holly.

ANNUAL FAIR, OCTOBER 13TH, 14TH, 15TH AND 16TH.

TREASURER'S REPORT.

*To the Stockholders of the Burlington County Agricultural Society for
the year ending January 10th, 1885 :*

RECEIPTS.

Cash on hand at last report.....	\$2,025 52
Rent of ground.....	55 00
Old lumber, manure, &c.....	120 83
Notes discounted in bank.....	6,901 42

Fines collected by National Trotting Association..	\$12 09
Entrance money for horses.....	2,294 00
Amusements, side shows, &c.....	966 85
Coat and package room.....	48 45
Refreshment and dining stands.....	2,378 12
Department of public comfort.....	500 23
Advertisements in schedule.....	396 75
Admission to grounds.....	15,089 25
Exhibitors' and Attendants' passes.....	123 50
Admission to grand stand.....	1,933 05
Crossing ring.....	256 00
Total.....	<u>\$33,101 06</u>

DISBURSEMENTS.

New buildings.....	\$8,245 25
Water pipes and laying.....	678 80
Grading.....	660 36
Telegraphing, &c.....	20 89
Water rent.....	35 00
Sundry fair supplies.....	336 16
Music.....	171 00
Postage.....	274 26
Printing schedules.....	429 50
Advertising.....	1,087 82
Printing.....	858 00
Detectives.....	51 96
Labor.....	345 02
Guards.....	498 25
Police.....	188 00
Clerks.....	445 02
Salaries.....	650 00
Hay, straw and poultry feed.....	628 33
Supplies for dining-room.....	302 68
Supplies for department public comfort.....	343 40
Interest.....	180 00
Insurance.....	150 00
Dues to National Trotting Association.....	56 00
Medals.....	78 37
Premiums.....	11,187 75
Notes in bank.....	5,000 00
Balance.....	169 24
	<u>\$33,101 06</u>

LIABILITIES.

Outstanding notes.....	\$5,000 00
Interest account to date.....	110 00
	<u>\$5,110 00</u>

AVAILABLE ASSETS.

Due from rent of Ground.. .. .	\$25 00	
Stands	65 00	
Manure.....	10 00	
Advertising in schedule.....	94 50	
Cash in hands of Treasurer.....	169 24	
		<hr/>
		\$363 74
Total liabilities over assets.....		\$4,746 26

ANNUAL REPORT OF THE BOARD OF DIRECTORS OF THE BURLINGTON COUNTY AGRICULTURAL SOCIETY.

The President of the society then read the following report of the Directors :

Mr. Chairman and Stockholders of the Burlington County Agricultural Society :

In reviewing the operations of our society for the past year we can congratulate ourselves on being extremely fortunate in inheriting all the elements necessary to make up and crown a successful exhibition. Fine weather, large attendance, a crowded exhibit, efficient and frequent railway service, all contributed to our success.

Your management, prompted by the inadequate accommodations of 1883, incurred during the past year extraordinary expenses in providing additional room for the general purposes of the fair, but with all our provision we were unable to properly accommodate the immense number of articles and animals demanding space. In all of our departments was witnessed the largest and finest display ever spread on our grounds.

Most of the recommendations of our last report with regard to improvements and accommodations have been carried out at an expense to the society of \$9,584.41. The result has been one new barn, fifty-two additional and commodious horse stables, increasing our number to about 200 substantial and roomy stalls; three new exhibition buildings, each 100 by 20 feet, two of them in the shape of annexes to the main building, and one an addition to the poultry building, doubling its capacity, the old poultry house being weather-boarded to harmonize with the new; a dining-room twenty-four by fifty feet for the entertainment of committees and guests; ten permanent and ornamental refreshment stands; two additional retir-

ing rooms; three new offices for superintendents of departments; several new glass cases for the display of fancy and costly goods; many hundred feet of additional shelving; several hundred seats for the resting of visitors; 1,200 feet of a substantial and costly fence on the southeast side of the grounds; several hundred feet of additional railing for the hitching of horses; the painting of the new and repainting of the old buildings; whitewashing of the rougher fences and buildings. Twelve hundred feet of main four-inch pipe have been laid across the grounds from the exhibition buildings to the stables, and 800 feet of lateral one-inch galvanized pipe along the stables and grand stand, and in the main exhibition building. Eight new hydrants and one double fire plug have been placed at convenient points on the lines of these pipes, thus giving the people, animals, engines and track a bountiful water supply. About two acres in and around the old track, back of the grand stand, have been leveled and graded; the hill on both sides of the judges' stand has been carted away, giving visitors inside the ring a clear view of the track exercises; the track has been repaired, the ditches widened, the space under the new stables filled up, the public road in front of the entrance buildings graveled, and many other repairs and improvements made, unnecessary to mention.

The pressure from ladies and others to provide a place in your grounds where they could quietly and comfortably regale themselves away from the crowds that usually surround the refreshment stands, induced the management to provide a canvas-covered structure, which was styled the department of public comfort. Here were dispensed many thousands of sandwiches and cups of coffee to the profit of the society and the comfort of those seeking this kind of refreshment.

In accomplishing this we have expended for—

New lumber.....	\$4,597 69
Brick, lime and mason work.....	620 98
Carpenter work.....	1,503 87
Hardware.....	459 29
Paint and glass.....	768 12
Tin guttering and spouting.....	71 81
Whitewashing.....	72 95
Hydrants and water-pipe.....	678 80
Grading and filling.....	660 86
Insurance.....	150 54

\$9,584 41

On account of the steadily-increasing number of exhibits (our entries last fair aggregating over 5,000, while the articles and animals composing these entries numbered several thousand more), our premium payments are swelling to unusual dimensions, increasing each year over \$1,000, until they now aggregate for the last fair \$11,118.75. Though liberal premiums and good accommodations in the way of needed improvements are essential to ensure large and handsome displays, it may be the part of wisdom, in view of the recent very large expenditures, to restrain our liberality in this direction.

The demand for the literature of the society is constantly increasing. This year we enlarged the number of schedules from 5,000 to 7,000, and, judging from the past demand, 10,000 will not be too many for the coming year. The advertisements procured for these about pay the cost of printing them. Besides these we distributed 3,000 handsome chromo-posters of the picture entitled "The Jerseys," 1,000 plain posters, 8,000 trotting programmes, 20,000 programmes of entries, and various other devices to give publicity to our undertaking.

We also advertised for six weeks in all the principal newspapers in New Jersey and the adjoining counties and cities in Pennsylvania. Some of this, on account of distance, proved unremunerative, and should be accordingly regulated, but in Philadelphia it will pay us handsomely if still more original and vigorous measures be devised to attract the masses.

We believe the number of admissions was diminished by other attractions about that time existing, such as Pennsylvania State Fair, the Electrical Exhibition, and so much political excitement attracting and satisfying the curiosity and desire for enjoyment of the people. The number of tickets sold by the railroads in 1883 was 22,618; in 1884, 22,033; decrease, 581. The number of admissions in 1883 was 41,337; in 1884, 42,982; increase, 1,645. Although we had this year 1,645 more admissions than last year, our receipts on this account were \$129.60 less. This was caused in a measure by superior attractions on the last day, which brought out more of the visitors possessing free admission tickets, increasing the number from 6,190 to 8,260; increase, 2,070, made up of stockholders, 459; complimentaries, 288; attendants, 690; exhibitors, 515; sutlers, 104. It is thus apparent that, although having more admissions, we had less receipts on account of the free tickets more frequently repeating themselves.

While there are many improvements that could be properly and profitably added to those already on your attractive grounds, we recommend to the management for the coming year the construction of those only of a temporary nature, or such as emergency may require. We feel that this will be judicious, since the operations in that line during the past year have been quite radical in extent, and have entailed upon the society a considerable debt.

You doubtless bear in mind that soon after the management of your society passed into the hands of a Board of Directors that occasion was taken to show that its true mission was to encourage production, rather than promote the idea of paying large dividends to the stockholders. With this idea in view the premiums that have been offered from year to year have been increased, and the amount of the same that has been drawn has increased over \$1,000 annually throughout the eight years of the new management, the whole amount drawn during the period being \$59,948.27, and by examining the yearly accounts we find in the same time there has been expended for improvements \$39,742.81. Adding this to the amount paid in premiums and we have \$99,691.08 expended in the eight years to encourage production. For it is doubtless attributable to the fact of the liberal expenditure thus recited that so large a body of exhibitors have assembled with their goods to compare product with product, and idea with idea; and have departed to their homes each year with new and improved methods of production, to return the next with better wares, making each exhibition in its turn excel the former.

The improvements that have been referred to having been built of the best material, procured of very low figures, constructed in workmanlike style at moderate cost, make an asset to the society worth all it cost, viz., \$39,742.81. Add to this the indebtedness of \$11,000 found on the society's property, at the commencement of the new management, which has been removed, and we have the sum of \$50,742.81 of earnings. Take from this the present debt of the society as shown by the Treasurer's report, \$4,750, and we have \$45,992.81 as the net amount earned for the society during the eight years' management, or a yearly average of \$5,749.10. A sum equal to 143 per cent. on the whole amount of the capital stock of the society at its par value.

MOORESTOWN AGRICULTURAL AND INDUSTRIAL SOCIETY.

OFFICERS FOR 1885.

<i>President</i>	LEVI BALLINGER.....	Moorestown.
<i>Vice President</i>	E. BURROUGH.....	Merchantville.
<i>Recording Secretary</i>	FRANK GARRIGUES.....	Moorestown.
<i>Corresponding Secretary</i>	GEO. T. HAINES.....	Haddonfield.
<i>Treasurer</i>	WM. MATLACK.....	Moorestown.

EXECUTIVE COMMITTEE.

LEVI BALLINGER,	JOSEPH M. KAIGHN,	DARLING CONBOW.
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Spring Exhibition, June 9th and 10th, 1885.

Fall Exhibition, September 18th and 19th, 1885.

DIRECTORS' ANNUAL REPORT FOR 1884.

To the Stockholders of the Moorestown Agricultural and Industrial Society:

Immediately after their election your Board of Directors began the work of the year by holding a series of meetings for the purpose of organizing and assigning to the several committees the division of labor properly belonging to each. Among their first duties was that of fixing the time for holding the spring and fall exhibitions of the society. After consulting the times selected by nearly all the agricultural societies of West Jersey and Eastern Pennsylvania, we endeavored to name two days for each fair which were not chosen by any other society within the above limits, but, as the sequel showed, we happened to appoint a time for our Fall Fair on one or both of which days five other similar organizations held popular exhibitions, namely, the Woodstown Fair, Vineland Fair, Freehold Fair, State Fair of Pennsylvania, held at Philadelphia, and the Electrical Exhibition, also held in Philadelphia, each of which must have diverted many visitors from our own. There was, at the same time, not only a wave of popular exhibitions, but also a tropical wave of intense heat, which was so enervating in its character that it prevented many others from attending. The above-mentioned hindrances account in great measure, we believe, for the lessened attendance and lessened receipts of the Fall Fair. On the other hand, our Spring Fair was eminently suc-

cessful, both in the display of exhibits and in the attendance and character of the visitors, and as our financial statement shows that the net gain of the Spring Fair was more than overcome by the net loss of the Fall Fair, the opinion prevails among some of the members of the Board that there would be wisdom in dispensing altogether with the latter and concentrating all the energies of the society in developing the former. The argument in favor of this cause is, that while there are so many opportunities for bringing to the attention of the public the various products of the farm and garden, &c., which mature in the autumn season, there are comparatively few chances to bring into competitive test the innumerable varieties of strawberries, raspberries, &c., or of the many vegetables ripening in the early summer, and as the cultivation of these crops are leading industries in this community, we believe that we should exert more of our energies to the advancement of those branches of agriculture in which our fellow citizens are so deeply interested. The field trials of farm machinery, instituted at our Spring Fair three years ago, is attracting the attention of farmers and others from beyond the limits of our own State, and we are persuaded that this is the proper time to exhibit farm implements—just previous to when they will be required in the hay and harvest fields, when visitors can have the benefit of the latest thought brought into action in the economy of labor. Moreover, manufacturers and agents of meritorious implements are desirous of attending fairs where their productions and wares can be tested in competition with others designed to do the same kind of work, while those of a doubtful merit will avoid such trials and exhibit where no practical test is required, the effect of which is to foster the worthy and condemn the unworthy, and the buyer is protected by having the latter weeded out before his investigations are begun. When we remember the difficulty experienced in selecting two days for our Fall Fair not occupied by some sister organization, and when we see the wide opening there is for a well-conducted Spring Fair, do we need to be admonished more as to the pointings of success on the high road of prosperity? We deeply regret that we are compelled to announce the loss of our esteemed fellow Director, Darling Conrow; who was suddenly called from works to rewards near the close of the year just passed. Suitable resolutions of respect to his memory have been adopted and entered at large on our minutes.

The Directors have expended, during the year, the sum of \$200 in

the erection of a building to be used as a restaurant, which will give the space formerly occupied for that purpose in the main building, for the display of exhibits, which expenditure nearly balances the overdrawn item in the financial statement. In conclusion, stockholders, permit us to suggest that your duties to the society will not terminate with the election of a new Board of Directors this day. If you would have the society attain the highest objects for which it was instituted, it will be necessary for every one to lend a helping hand, and not throw all the burden of the work upon the shoulders of the Directors. Be willing to accord to them some of your best thoughts and best efforts. We rarely accomplish any good without some sacrifice, either in time or means. That which comes without sacrifice seldom benefits the recipient. While it is desirable that the society should be placed upon a self-sustaining basis, yet we would deplore the day when it would be converted into a money-making corporation. It should have a higher aim than this. Its grandest purpose should be the elevation of our different callings, the higher education of our farmers and artisans, the placing of our community in the forefront of advancement, the stimulating of the spirit of improvement in all who come in contact with it. To do these things it is necessary to have the earnest co-operation of every stockholder. Will it be given, or will it be withheld? It is for you to say whether success or failure attend its future existence.

Respectfully submitted,

CLAYTON CONROW,
President.

Financial Statement of the Moorestown Agricultural and Industrial Society, for the year ending February 7th, 1885.

RECEIPTS.

Feb. 2, 1884—

Balance in treasury.....	\$11 72
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June 10 and 11, 1884—

Net profit from Spring schedule	12 00
Admission to Spring Fair.....	428 80
Sales of fruits, &c., at Spring Fair.....	17 95
Net profit of restaurant at Spring Fair.....	44 46
Net profit of lemonade stand.....	11 44

September 9 and 10, 1884—

Admission to Fall Fair.....	\$381 31
Rent of horse stalls, Fall Fair.....	20 00
Net profit of restaurant, Fall Fair.....	1 07
Rent of fair grounds, four times.....	20 00
Amount of stock sold (thirteen shares).....	180 00
Overdrawn orders	259 67
Premium money returned Treasurer.....	28 00
	<hr/>
	\$1,814 42

EXPENDITURES.

Lumber, I. W. Heulings' Sons.....	\$152 66
Bricks, John Muffet & Son.....	16 10
Carpenter work, James Bramall.....	48 14
Printing, advertising, postage, &c.....	156 88
Money premiums.....	675 00
Silverware.....	23 94
Bicycles, Fall Fair.....	47 80
Work on grounds before exhibitions.....	25 75
Watching, cleaning grounds, &c., during and after exhibitions....	26 25
Hay, fodder, straw, &c.....	20 00
State tax on corporation.....	8 17
Dishes, \$3.20; ice, \$2.07; freight, 54 cents; total.....	5 81
Interest.....	90 00
Balance on hand.....	22 97
	<hr/>
	\$1,814 42

JERSEY BREEDERS' CLUB.

<i>President</i>	CHARLES S. TAYLOR.
<i>Secretary</i>	JOHN P. HUTCHINSON.
<i>Treasurer</i>	CALEB S. RIDGWAY.

EXECUTIVE COMMITTEE.

WILLIAM S. TAYLOR.

HEULINGS LIPPINCOTT.

This club, organized March, 1879, for the promotion of Jersey cattle interests, has increased its membership since that time from eight to twenty-one. In the several herds belonging to the members there are in all about five hundred registered animals.

J. I. BISHOP.

CAMDEN COUNTY.

CAMDEN COUNTY BOARD OF AGRICULTURE.

OFFICERS OF THE BOARD FOR 1885.

<i>President</i>	EZRA C. BELL.....	Mount Ephraim.
<i>Vice President</i>	EDWARD S. HUSTON.....	Haddonfield.
<i>Secretary</i>	GEORGE T. HAINES.....	Haddonfield.
<i>Treasurer</i>	J. STOKES COLES.....	Haddonfield.

EXECUTIVE COMMITTEE.

THEO. HIDER, Blackwood.	JOEL HORNER, JR., Merchantville.
E. BURROUGH, Merchantville.	AMOS E. KAIGHN, Ellisburg.
SAMUEL L. BURROUGH, Merchantville.	

SOCIETY AND CROP REPORT.

The third annual meeting of the Camden County Board of Agriculture was held in Microscopic Hall, Camden, N. J., 11th month, 25th, 1884.

After the opening of the meeting by the President, at 10:30 A. M., it was ascertained that there were delegates present from the Farmers' Association, and from Haddon Grange, P. of H., with credentials, and a number of individual farmers.

There having been a programme prepared by those in charge, and pretty thoroughly circulated amongst the farmers, the order of which had to be varied somewhat, partly on account of some of the speakers not being able to attend, and partly on account of there being more business than was anticipated.

Our delegate to the State Board gave a full and very interesting report from that body, which was much appreciated, as will be shown by his unanimous re-election.

Wm. S. Taylor, chairman of the Executive Committee of the State Board, being present, was then introduced and made some profitable

remarks coinciding with the views of the previous speaker, and endeavoring to show to the farmers the value of having a Bureau of Agriculture established at Trenton, which remarks were favorably received and indorsed by a member present.

At the afternoon session, articles of association, constitution and by-laws were adopted.

Officers were then elected for the ensuing year.

At this time it was found that the afternoon would be too short for what we had to do, and it was resolved that when we do adjourn it be to meet in this hall in four weeks, at 1 P. M.

Dr. W. B. E. Miller, V. S., was then introduced, and addressed the meeting on the diseases of animals, naming the different diseases to which our domestic animals are subject. The first to which he called attention was glanders, or farcy, a highly contagious disease of the equine species, and capable of being inoculated into the human system, and naming three principal symptoms by which it is characterized. He also spoke of a disease known as *tuberculosis*, as being more prevalent among cattle than horses. He next named *anthrax* as being a contagious and infectious blood disease which rages in both epizootic and enzootic form, attacking horses, cattle, sheep, poultry and dogs, and may be transmitted to man. Swine plague, or hog cholera, next claimed the attention of the speaker, and on which he dwelt considerably. That portion of his address referring to pleuro-pneumonia was particularly interesting, as some of the members have had sad experience with it, as well as with hog cholera.

Edward Burrough spoke of his loss from hog cholera and exhibited some parasite which he had gathered from an animal affected with the disease.

L. T. Derousse read a most interesting article on smut, a blight which affects, in a destructive manner, wheat and corn. He exhibited specimens of smut under a microscope, showing the thousands of cells or spores which compose it. He also exhibited a table showing experiments in soaking or washing the grain in different solutions before sowing, as being a preventive.

Edward Burrough was then elected delegate to the State Board.

At the adjourned meeting held 12th month, 23d, 1884, the question whether rye, sown and plowed under as a fertilizer, was profitable, was ably discussed by a number of members. No definite conclusion

was arrived at, owing to the want of a proper method of noting results. Many members thought it profitable to sow rye for early feeding.

The following preamble and resolutions were offered by a committee appointed early in the session, and unanimously accepted :

WHEREAS, The depredations of the English sparrow in this country have assumed such proportions that they are a serious disadvantage to the agriculturist, horticulturist and florist; therefore, be it

Resolved, That it is the experience and opinion of this Board that the English sparrow is a destructive and dangerous obstacle to farmers and seedsmen, and that the damage inflicted upon our crops far exceed any compensating benefits they confer.

Resolved, That we believe it to be the interest of the agriculturist, horticulturist and florist that the English sparrows should no longer be protected as insectivorous birds, and that we hereby instruct our delegate to the State Board of Agriculture to present a copy of these resolutions and ask an expression of opinion as to their usefulness.

Resolved, That in the event of their indorsement that the committee on legislation be instructed to draft a supplement to the insectivorous bird law, exempting said sparrows from its provisions.

A communication was received from the Mercer County Board of Agriculture, containing a resolution in regard to the abolition of nuisances and unsightly objects along our highways, which was read and referred to a committee consisting of R. L. Shivers and L. T. Derousse to co-operate with the said Mercer County Board; it being the opinion of this Board that we had laws already on our statute books that would cover the subject, if enforced.

CUMBERLAND COUNTY.

CUMBERLAND COUNTY AGRICULTURAL AND HORTICULTURAL SOCIETY.

OFFICERS FOR 1885.

President ELI E. RODGERS.....Bridgeton.

VICE PRESIDENTS.

ROBERT M. WARE,

JOHN TYLER, Jr.,
FRANCIS B. MINCH.

T. F. DAVIS,

Secretary WM. O. GARRISON..... Bridgeton.

Treasurer CHAS. H. MULFORD.....Bridgeton.

EXECUTIVE COMMITTEE.

I. W. RICHMAN,
L. M. TOMLINSON,
CHESTER J. BUCK,

JOB M. YOUNG,
SAMUEL FLANAGAN,
E. M. MULFORD,
JOSEPH GLASPEY.

LEWIS M. HINS,
T. W. WILLIAMS,
J. HARRY SMAILEY,

CUMBERLAND COUNTY CROP REPORT.

The past year has not been one to particularly encourage the farmers of Cumberland county. The Spring was fairly open but wet, the Summer dry and hot, followed by a continued draught in the Fall that reduced the acreage of Winter wheat nearly one-half. Prices of all farm products have ruled low.

Profits have been small, except to the few who, through high fertilizing and thorough tillage, have grown large crops of superior quality.

Our farmers are realizing that they must look beyond corn and wheat for profitable labor. Fruits and vegetables are claiming a more prominent place in their plans. The result of this is seen in the young peach orchards on almost every farm in the peach-growing belt.

From the most reliable sources of information at my command, I estimate that 140,000 peach trees have been set in the county this year. These, with the hundreds of orchards formerly set, will make our county as famous for quantity as it has long been for quality of its peach product.

Our apple crop was large; prices were small.

Small fruits and grapes are largely and successfully cultivated, but in the absence of reliable data, I will not attempt any statistics, though I am told that as many as eight cars of berries have been shipped in a day from one railroad station.

The tomato is one of the most important vegetable crops, as no less than 10,000 tons are yearly packed by the canning houses of the county, filling about 4,000,000 quart cans, and giving remunerative labor to a large force of men and women. Add to this the hundreds, and perhaps thousands of tons consumed at home and shipped by the crate to the larger cities, and we must conclude that this crop returns the producers not less than \$100,000. The average crop is about thirteen tons per acre, though several cases have been reported where from nineteen to twenty-one tons were grown.

Growers of sweet potatoes experienced much trouble in securing a stand, owing to the dryness at time of setting. In so far as they succeeded they had good crops, and realized fair prices.

The cabbage worm has ravaged almost every cabbage field in the county. This important crop is a failure.

Among crops worthy of notice are a ten-acre field of wheat, grown by Morris Bacon, Esq., of Greenwich, which produced 445 bushels.

Mr. James Bacon's peach orchard, of 245 trees, produced \$540 clear of all expenses.

Mr. Theodore Baker sold from one-half acre of strawberries 2,358 quarts, for \$329.58; expense of picking, cartage, freight, commission, &c., \$105.37, leaving \$224.21, net. The same wide-awake gardener sold from 2,000 hills of early tomatoes, between July 1st and 30th, 251½ baskets, which sold in New York for \$303.28, at a cost of \$52.97, for freight, commission, &c., leaving net proceeds of \$251.31.

Mark R. Dare, of Greenwich, sold \$580 worth of asparagus from less than two acres, which has been cut for the past thirteen years, always at a handsome profit.

John B. Garrison, of Roadstown, reports a total receipt of \$182.60 from one acre of lima beans.

S. Hilliard reports from his farm, on Maurice river, 428 bushels of wheat from eight acres of ground, accurately measured. He further reports that this crop was grown without any fertilizer applied; that it was preceded by corn, which produced 1,004 bushels—equals 125½ bushels shelled corn per acre, fertilized with 120 bushels of lime only.

These few facts, hastily compiled, will tend to show that farming is still profitable, if conducted on liberal business principles.

CAPE MAY COUNTY.

CAPE MAY COUNTY REPORT.

BY S. C. TOWNSEND, OCEAN VIEW.

DEAR SIR—Your card was received and in reply will say, that no effort has been made to organize a County Board of Agriculture.

The following report I copy from statistics gathered for the Department of Agriculture, Washington, D. C. :

Average yield of Wheat per acre.....	14 bushels.
“ “ Rye “	11 “
“ “ Oats “	15 “
“ “ Corn “	26 “
“ “ White Potatoes per acre.....	75 “
“ “ Sweet “ “	75 “
“ “ Hops “ “	200 pounds.
“ “ Hay (fresh) “ “	1 ton.

All crops have been more or less injured by a heavy northeast wind the fore part of the season and dry weather. Hops were a very light crop but said to be of excellent quality. The raising of poultry is becoming very popular and large quantities are shipped from this county in the course of the year.

(411)

ESSEX COUNTY.

ESSEX COUNTY BOARD OF AGRICULTURE.

OFFICERS OF THE BOARD FOR 1885.

<i>President</i>	ISAAC S. CRANE.....	Livingston.
<i>Treasurer</i>	MILTON H. CANFIELD.....	Caldwell.
<i>Secretary</i>	J. H. BALDWIN.....	Livingston.

BOARD OF DIRECTORS.

MARCUS Y. BALDWIN,	RUFUS F. HARRISON,	J. H. M. COOK,
A. W. TEED,	WILLIAM DIERCKS.	

Delegate to State Board.....J. H. BALDWIN.....Livingston.

ESSEX COUNTY CROP REPORT.

BY J. H. BALDWIN.

The farmer of this county will recur to the season of 1884 with varying thoughts. He will scarcely be able to class it as prosperous, and he will be biased if he charges it on the side of failure. It was neither the one nor the other; but, coming about midway between, it will be classed as medium. The spirit of progress is prevalent in this section, and when the season commenced there was a feeling among the agriculturists to exert themselves more than usual to cultivate in such manner as to produce large and remunerative crops. Each theorist undertook to work out his pet idea to such issue as would enable him to clearly demonstrate its superiority over those who were antagonistic to it. He that believed that manure should be plowed in, wanted to show the man who advocated spreading it on the surface and harrowing it in, that the former was the only proper method, and the one only that would ultimately pay. And so each pursued a course in consonance with his favorite theory, and waited future developments. But the results were not altogether just what were expected, for the weather was most capricious. When they

would have had it warm, it was cold and unfavorable to vegetable growth; when they would have had showers it was provokingly dry, and when they would have preferred a dry season the sky was clouded, rain fell almost continually, and the effect was direful.

These causes made the hay crop not more than half of the average product, and the fact that it sold in the market at an advanced price over the preceding year afforded no consolation, as but few had enough upon which to winter their stock, while others were from necessity buyers in the market when they should have been sellers.

Oats promised well, but when harvested and threshed it was found that the yield was about thirty per cent. lower than had been estimated, and then they were light in weight.

Wheat and rye produced better in most cases than had been anticipated, and the grain was exceptionally fine in quality. The yield per acre ranged from twenty-three to forty-five bushels—the latter on ground upon which a good growth of clover had been turned under, supplemented by 400 pounds per acre of ground bone.

Potatoes were a failure in many instances, and in not one were they a decided success. The product in bushels was less per acre than it has been for several years. The prevailing custom in reference to seeding in this crop doubtless militates in a great measure against the chances for a profitable product. With but few exceptions, it is the practice to plant either half or whole potatoes, and the crop when dug is nearly half made up of potatoes about the size of marbles and quite unmerchable. On the other hand, one gentleman who cut his seed to single eyes and planted them at alternate distances of four and eight inches, had less than one bushel in ten of unmerchable tubers.

Thanks to a late season, the corn crop was excellent and exceeded the estimate of nearly all. During July the too frequent rains retarded its growth until all hopes of its maturing were given up, but the lateness of the season saved it.

Turnips failed to do well.

The seeding of winter grain was done nearly a month later than usual.

Peaches yielded poorly, but the apple crop was enormous and thousands of bushels rotted on the ground because they could not be disposed of. Cider mills were over-stocked and there was no sale for the apples. Hundreds of gallons of cider were sold at five cents per gallon, a price lower than has been reached for a long time.

The Essex County Board of Agriculture, which meets with Livingston Grange, has been active during the year, and accomplished a great deal in educating the farmers and improving their social condition. Important subjects are discussed at nearly every meeting, and the best theories of the best thinkers are clearly set forth and have their weight. "Fertilizers, and the best Methods of Application," occupied attention at one time; "Sheep," at another; "Swine," at another, and "Roads: How may they be Macadamized for the Least Cost?" was discussed at several meetings. It is to be regretted that this latter subject was not more fruitful in its results, for while, perhaps, there is no county in the United States better supplied with macadamized roads, yet it is true there are still places within its borders that are sadly in need of improvement of that character, and it has been the aim of the County Board, by its discussions, to educate its members and, through them, many others, the desirability of making and maintaining good roads. The arguments advanced were, that comfort would be enhanced in the necessary journeys to and from market; that a large saving would accrue by repairs being needful less frequently, and that the land would increase in value, owing to increased accessibility. It was not difficult to demonstrate the advantages of better and smoother roads, but how to secure them is a still unsolved problem. There seems to be a deep-rooted prejudice against the creation of a debt, and as it is impossible to raise enough by direct taxation in any one year, there seems to be no way of raising money without involving the alternative mentioned.

There is a complaint, which seems to be growing more common among farmers, to the effect that farming is unprofitable, especially in this immediate part of the world. It is alleged that Western grain growers have crowded out the Eastern men, by reason of the large crops raised without the application of fertilizers, which enables them to undersell the Eastern men; that sheep raising and wool growing are unremunerative for the same reason; that cattle raising, likewise, cannot be entered into, and, in fact, that nothing is left for those in this immediate neighborhood that will pay a living profit but trucking and milk raising. They do not stop to inquire in what respect the methods of the West differ from those employed in the East, but they go on in the same old way that was in use in the last century. Old-fashioned implements are used, and farms are cut up into small lots where tillage cannot be otherwise than expensive. Even hand

labor is employed in branches of work that machinery can do far more effectively and profitably. There are not a few who have for years made farming their vocation, who do not take an agricultural paper, and as they mingle little with others they learn nothing about new seeds, new implements and new methods. With all of these drawbacks of their own making, they think it strange that they are not more successful and are not competent to keep even with their more wide-awake Western competitors. They should surmount these difficulties by reading more, by using more labor-saving implements, and by farming on a large scale. They should also remember that they have a market for all of their products at their very door, and can procure the necessary fertilizers to restore their long-neglected and partially exhausted lands with the least possible expenditure of money.

Milk raisers in this vicinity, it would seem, are guilty of a grievous error in depending too largely upon brewers' grains as a ration for their cattle. Thousands of dollars are spent annually in this way, by men who have plenty of spare land. Were this large sum of money expended in raising corn, it would without question produce a crop more than sufficient to replace the grains, the quality of the milk sold would be improved and the farm lands would be the better for it. As it is, the manure produced by feeding grains is not strong and does not enrich the soil as does manure from the same stock when corn meal or cotton-seed meal is the ration. Again, there is a large loss to the milk raiser who uses grains as a feed, in the time of man and team used in drawing them home. Let these matters be fully considered, and it will not be long before we will see larger and better crops growing and less money expended for that which, if it does produce a return, does through a system that is not properly economical.

Again, these same milk raisers, as well as farmers generally, pay too little attention to raising their own milk-producing stock. By many no young stock is raised; when, from any cause, their supply of milk runs short, a cow is purchased from a dealer to bring the product of milk up to the desired quantity. The best selection possible is made, but it should be kept in mind that the chances are decidedly against the dealer having first-class animals. Every man having cows should raise enough young stock to replace the old, and the calves to be raised should always be from the best milkers on the place. If this plan should be pursued, it would not be long before the milk raisers would

find that the quantity of milk would be increased without a corresponding increase in the number of cattle kept.

The members of this Essex County Board of Agriculture have not been slow to appreciate the benefits that have come to them through the valuable reading matter that has been disseminated by the National Agricultural Department and by the State Board, and particularly through the never-to-be-too-much-praised bulletins and reports of the State Experiment Station. Who is there who has been fortunate enough to receive these papers that has not been enlightened in numberless ways? The experiments conducted in feeding stock, which were fully reported, are not to be forgotten, while the work done in analyzing commercial fertilizers, thereby driving worthless stuff out of the market and saving thousands of dollars annually to the agriculturists of the State, will always cause the Experiment Station to have a place near the hearts of all that ever experience a sensation of gratitude. And while upon this subject, I am constrained to suggest that the institution named may do one more thing which will add to its glory and to the further benefit of the farmers, and that is to prepare a number of formulas adapted to different crops and to different parts of the State, which the farmer, having purchased the necessary ingredients, could himself put together. He could then study the character of the soil of his farm, and then in preparing his fertilizer adapt it to his needs, making it better in every respect than any ready prepared commercial fertilizer. If it is feasible to adopt this suggestion, the Experiment Station may confer a benefit upon the farmers greater, if possible, than any hitherto conferred.

GLOUCESTER COUNTY.

GLOUCESTER COUNTY BOARD OF AGRICULTURE.

OFFICERS OF THE BOARD FOR 1885.

<i>President</i>	SAMUEL MOORE.....	Harrisonville.
<i>Vice-President</i>	CHALKLEY DUELL.....	Wenonah.
<i>Secretary</i>	GEO. H. GAUNT.....	Paulsboro.
<i>Treasurer</i>	THOMAS BORTON.....	Mullica Hill.
<i>Representative to State Board</i>	W. E. SHOCK.....	Woodbury.

HUNTERDON COUNTY.

HUNTERDON COUNTY AGRICULTURAL SOCIETY.

OFFICERS FOR THE YEAR 1885.

<i>President</i>	JONATHAN HIGGINS.....	Flemington.
<i>Vice-Presidents</i>	{ C. F. FISHER, J. L. JONES, }	Flemington.
<i>Treasurer</i>	JOHN H. DEMOTT.....	Flemington.
<i>Recording Secretary</i>	J. L. CONNET.....	Flemington.
<i>Corresponding Secretary</i>	W. C. PARKER	Flemington.

BOARD OF DIRECTORS.

F. S. HOLCOMBE,	BENJAMIN E. TINE,	O. B. DAVIS,
SIMPSON S. STOUT,	DAVID D. SCHOMP,	J. B. HOPEWELL,
JOSEPH HAINES,	AUG. BLACKWELL,	HIRAM MOORE,
J. M. DUCKWORTH,	MICHAEL SHURTS,	DAVID VAN FLEET,
LOUIS A. EXTON,	ALEX. PROBASCO.	

Annual Fair fourth week in September, at Flemington.

HUNTERDON COUNTY CROP AND SOCIETY REPORT.

BY F. S. HOLCOMBE, LAMBERTVILLE.

I herewith present to the State Board of Agriculture a general description of the crops, grain, fruit, &c., in Hunterdon county for the past year, and the prospect for the coming year. The yield of wheat is generally good throughout the county; some injured by the Hessian fly, but the general yield better than last year in quantity and quality. More farmers adopting the harrowing process in the spring; using more and better fertilizers; average yield from twenty to thirty-five bushels per acre; some reports of whole fields yielding thirty-three bushels per acre, while some fancy farmers, highly fertilizing their soil, produce over forty bushels per acre. Rye crop good. Oats good, but owing to general and continual raining for two weeks, a large portion of the crop was damaged, and a good quantity

lost on the ground. Buckwheat better than last year, although flour selling higher than wheat, bringing \$3 per 100 pounds for pure flour. Corn crop better than last year throughout the county, averaging all the way from thirty to 100 bushels per acre. Potatoes, fair crop, but not as many planted as last year; prices better, worth at this time fifty cents per bushel; last year thirty cents. Grass and hay a fair crop, good quality, but not an average on account of dry weather two months before maturing.

The hay and sod fields at this time are looking bad, and the prospects for hay and grain next summer are not very flattering. There are two causes for this—the extreme dry fall, farmers not seeding as early as common, and the grain not getting much top; the winter freezing and thawing so much, a great deal of wheat is hoisted out of the ground.

The crops of small fruits were good, excepting blackberries. Raspberries, strawberries, currants and the early cherries, good crops, bringing fair prices. Strawberries and raspberries are being cultivated more and more each year, more than 200 bushels being sold in Flemington, and more than 300 bushels in Lambertville, raised by farmers, besides the enormous quantities shipped to the large cities. To give you a small estimate, Mr. Thomas Hunt, of Lambertville, sold this fall \$1,500 worth of strawberries and raspberries from small patches located on side hills; some as large as guinea eggs, which he shipped to Philadelphia, and received from fifty cents to \$1 per quart.

Mr. Clark Hunt, of Stockton, is the largest vegetable grower in my section of the county; also raising strawberries (being along the canal feeder, he can have all the water he wants for sprinkling), picking in one day 1,100 quarts from a very small patch for the amount of berries; fruits and vegetables running into the thousands of dollars—shipping green tomatoes to the South.

PEACHES.

Again I report a fair crop; or, perhaps, a good half crop would be near right. Brought good prices—yielding the farmers good prices—and bringing into the county vast sums of money. As reported last year, the peach is taking a wide range in our county, farmers continually setting out large orchards. I send you reports from Belvidere Railroad, procured through Mr. J. A. Anderson, Superintendent:

Holland.....	2,056
Milford.....	2,467
.....	6,346
.....	410
.....	15,251
.....	16,942
.....	3,058
.....	10,028
	<hr/>
	56,558

On the South Branch road, running from Flemington, our county seat, a branch of the Central, are two stations shipping large quantities; Lehigh Valley Railroad, Lansdowne station, shipped 81,000 baskets. The different stations on this road shipped over 500,000 baskets. The crop for the year, from the best information I can get, was 675,000 baskets, about ten per cent. less than last year. A prominent peach grower tells me more money was realized than last year.

Hunterdon county peach crop for 1884 was over 675,000 baskets, sent to New York and other places. Being scarce in Pennsylvania, loads were carted and shipped up the road to Scranton, Wilkesbarre, Water Gap, and some from Lambertville to Cincinnati, Ohio, while thousands of baskets were peddled to all of our villages of Lambertville, Flemington, Clinton and other places.

I send you what one of our enterprising merchants in Flemington has done, beginning February 1st, 1884, and ending February 1st, 1885: W. H. Fulper has bought 58,600 pounds poultry, 293,500 pounds pork and 13,350 pounds dried fruits.

I would make special mention of 569 pounds of raspberries received from Asa H. Fisher, raised on one-half an acre of land, amounting to \$142.25, dried by an evaporator in the patch.

Other firms in Flemington, Richards & Sutphin, P. Brewer & Co., and others, doing a very large business in pork, poultry and fruit. In Lambertville, Carver & Williams, Brown & Bro., J. Fisher, John Garrish, Dilts & Bohite, and several other stores and butchers, doing a large business in pork and poultry.

Poultry is on the increase in our county, stock improving, farmers taking more pride in raising early chickens, large quantities selling

for 32 to 35 cents per pound. Prices for Thanksgiving turkeys, 16 to 17 cents per pound; ducks, 15 to 16 cents per pound; chicks, 14 to 15 cents per pound. For the holidays, about one cent less on the average; worth now, 13 cents per pound. Turkeys, 16 to 18 cents per pound at our merchants' stores.

Pears were not a full crop. Apples better than last year; a good half crop throughout the county. Shellbarks and walnuts very scarce.

DAIRY.

Quite a large business is done in our county in shipping cream and milk to New York. Shipped on

The Central Road and Flemington Branch		
about.....	75	cans per day.
Lebanon.....	180	" "
White House.....	100	" "
Amundale.....	80	" "
Lehigh Valley.....	40	" "
Total.....	475	" "

Seven creameries engaged in shipping cream to the cities and Ocean Grove, Asbury Park, &c., averaging 300 cans per day.

Four creameries engaged in making butter and cheese, averaging 20,000 lbs. of milk per day.

VEGETABLES.

As our villages and towns are increasing there is more demand for vegetables. More truckers have started to supply the market, but as yet we don't raise enough to supply the demand.

TOMATOES.

The tomato crop this year was larger than usual; but severe and early frost cut off very large quantities. Some farmers, getting out their plants late, lost thirty or forty tons by freezing. We have only one canning factory in our county. J. H. Butterfoss has put up this year 425,000 cans, 40,000 bushels tomatoes and 1,000 barrels catsup. If the frost had kept off three weeks longer he would have reached, as he expected, nearly 600,000 cans. But the citizens of the city has

served an injunction to stop him, and I think we will lose our market for tomatoes. Instead of stopping this one we ought to have at least four or five more in the county, and then employment would be had for hundreds of idle hands, male and female.

We have four persons in our county who keep records of rain-fall, temperature of weather, &c. The peach bud is reported injured, and at present we can give no information in regard to crop of fruit.

We have a great many manufactures in our county, two large spoke-mills shipping to all parts of the world. A large number of steam saw mills, turning lathes, paper mills, rubber, cotton and twine mills, iron foundries, steam mills, basket factories, faucet and many other kind of factories, giving employment to thousands of people. One branch of our industry in Hunterdon county is stone quarrying, doing a very large business. It would be impossible to mention one-half, as our county is large, and I can only write what information I can get.

REPORT OF AGRICULTURAL SOCIETY FOR THE YEAR.

Whole receipts.....	\$6,238 20
Expenses.....	6,081 99
Balance	<u>\$156 21</u>

MERCER COUNTY.

MERCER COUNTY BOARD OF AGRICULTURE.

OFFICERS.

<i>President</i>	RALPH EGE.....	Hopewell Farm. Club.
<i>Vice President</i>	JOHN F. PHILLIPS.....	Princeton Agr'l Ass'n.
<i>Secretary</i>	F. DYE.....	Lawrence Grange.
<i>Treasurer</i>	S. P. KETCHAM.....	Pennington Grange.

DIRECTORS.

J. A. HENDRICKSON, Ewing Grange,	A. L. HOLCOME, Hopewell Farm. Club,
T. H. REED, Mercer Grange,	P. A. CUBBERLY, Hamilton Grange,
H. E. HALE, Princeton Agr'l Ass'n,	J. B. HORN, Pennington Grange.
G. W. JOHNSTON, Lawrence Grange.	

Delegate to State Board.....FRANKLIN DYE.....Trenton.

SOCIETIES REPRESENTED.

Pennington Grange, Ewing Grange, Hamilton Grange, Mercer Grange, Lawrence Grange, Hopewell Farmers' Club, Princeton Agricultural Association, Hamilton Township Agricultural Society.

SOCIETY AND CROP REPORT.

The agricultural interests of Mercer county are varied. The large and increasing manufacturing enterprises of Trenton bring to our doors thousands of the non-producing class who must be fed. To meet this demand, farmers in proximity to the city are giving increased attention to market-gardening and small fruits, and to the production of milk. Seventy-five or more persons are engaged in the retail milk trade, requiring the present milk product of most of the farms within a radius of from three to four miles around the city. Of the small fruits, there is a demand of from 12,000 to 15,000 quarts daily in its season, of strawberries alone, and other fruits in their proportion. Hamilton Square, Hightstown, Princeton, Hopewell

and Pennington, also require a daily supply of the mixed products of the farms among which they are situated. Our population is constantly increasing; new enterprises are springing up; flourishing schools are established and growing; new railroads are projected; farms are being made smaller and better, so that in many instances one acre produces more now than two acres did in years gone by. Our millers in country and city are introducing the new process of flour manufacture. The Messrs. Howell & Sons, of Trenton, have recently put into their new mills, the "Cornelia," the roller process entire, thus increasing their capacity to 700 bushels per day.

Connected with the County Board of Agriculture are nine different granges and farmers' clubs. Taking these in order, we have, in answer to inquiries concerning crops (in which 100 is taken as the standard) and the co-operative business done by them during the past year, the following replies in brief:

PENNINGTON GRANGE. - - - S. B. KETCHAM, *Sec'y.*

Purchases (chiefly of fertilizers), \$1,000. Crop yield—hay, 65; oats, 70; corn, 90; wheat, 90; potatoes, 70. Mr. Ketcham adds: "Our farmers are increasing the fertility of their soils. A few years ago no special fertilizer was bought except for wheat. Last year the spring crops received almost the same care in this particular that wheat had formerly received. The reports of the Experiment Station are watched and studied with great interest, and the intelligence of our farmers on advanced farming is broadening and deepening."

EWING GRANGE. - - - GEORGE L. HOWELL, *Sec'y.*

Purchases, \$1,000. Crop yield—hay, 85; wheat and oats, each 90; corn, 105; apples, 100. English Redling produced a heavy crop and is keeping well. Smith's Cider is falling behind. Grapes poor. The lecturer, J. A. Hendrickson, states: "Our farmers are turning their attention more to market gardening than in former years. Two gentlemen each grow annually 40,000 heads of early cabbage. Hay and milk are considered at present to be the most profitable crops to carry away from the farm, for both of which a convenient market is found in Trenton."

MERCER GRANGE. - - - W. J. PHILLIPS, *Sec'y.*

Purchases, \$1,566.45. Crop report—wheat running from 30 bushels to 35 bushels per acre; corn, 70 to 80 bushels; oats badly damaged by rain; apples and pears abundant; peaches, small crop. "Jersey cattle are popular with us as butter-makers, but those who are engaged in selling milk find they can obtain better results from the mixed breeds."

HAMILTON GRANGE. - - - *Reported by* THEO. CUBBERLEY.

Purchases, \$1,200. Crop yield—wheat, 85; grass, 70; oats, 90; corn, 100.

HAMILTON TOWNSHIP AGRICULTURAL ASSOCIATION.

This association was formed during the past year, and is in a flourishing condition. Crop report—peaches, 42; apples, 100; strawberries, 80; cherries, 25; raspberries, 75; blackberries, 100; pears, 20; grapes, 50; rhubarb, 80; sweet potatoes much injured by cold, wet spring; white potatoes, 85.

LAWRENCE GRANGE. - - - F. DYE, *Sec'y.*

Purchases, \$900. Crop yield—wheat, 90; corn, 105; oats, 90; potatoes, 85; hay, 85. There are several fine dairy farms in the township. Ten or more men are engaged in the milk trade, besides those supplying the Lawrence creamery. T. B. De Cou, a member of this grange, is experimenting with different fertilizers on the same and different crops, applying the same in commercial value. His object is to note the result through a series of years, of the immediate and lasting qualities of manures applied. This experiment, now in its second year, is here given:

CROP EXPERIMENT BY T. B. DE COU.

Experiment on four plots, of one acre each, same quality of soil, same field.

POTATOES.

	Cost.	Yield in Bushels.
Planted with Aspinwall planter May 2d and 3d, 1888—		
Plot No. 1—800 lbs. fine dissolved bone.....	\$16 00	
100 bushels Vincentown marl broadcast after planting.....	6 50	
Labor	2 50	
	<u>\$25 00</u>	157
Plot No. 2—Ten loads cow manure broadcast before plowing.....	\$22 00	
Labor.....	3 00	213
	<u>25 00</u>	
Plot No. 3—900 lbs. Mapes' potato manure.....	\$22 95	
Labor	2 05	
	<u>25 00</u>	179½
Plot No. 4—1,150 lbs. Mapes' potash bone.....	\$23 00	
Labor.....	2 00	
	<u>25 00</u>	188
Fertilizer applied with drill, after plowing and before harrowing.		

CORN.

	Cost.	Yield in Bushels.
Planted June 2d, 1884, in rows, with Hoosier corn-planter; rows 4 feet apart; 20 in. bet. kernels—		
Plot No. 1—800 lbs. fine dissolved bone.....	\$15 20	
100 bushels Vincentown marl.....	6 50	
Labor.....	8 30	
	<u>\$25 00</u>	63½
Plot No. 2—Ten loads cow manure.....	\$22 50	
Labor	2 50	
	<u>25 00</u>	63½
Plot No. 3—950 lbs. Mapes' corn manure.....	\$22 80	
Labor	2 20	
	<u>25 00</u>	73½
Plot No. 4—1,150 lbs. Mapes' potash bone..	\$23 00	
Labor	2 00	
	<u>25 00</u>	66½

HOPEWELL FARMERS' CLUB. - - J. M. DALRYMPLE, Sec'y.

Crop report—Corn, 110; wheat, 90; oats, 75; potatoes, 90; apples, 60. One member has a crop of 6,000 bushels. Peaches 50; shipments from Hopewell township to New York and Philadelphia markets, about 40,000 baskets, besides large quantities sold in Trenton, Princeton and other markets. New members have been added

during the past year and more interest manifested than formerly. Increased attention is given to improved breeds of horses and cattle. Several blooded horses are kept for service. Four farmers have herds of Jersey cattle. Others report splendid profits from sheep, raising early lambs. Messrs. Chas. Drake and D. Hill are growing Jersey Red hogs. Their stock exhibits at the New Jersey State Fair received first and second premiums on yearlings. Also on sows and pigs, and sweepstakes on pen of four sows and boar over all other breeds. C. V. Hill is giving attention to poultry-raising with incubator with excellent success.

PRINCETON AGRICULTURAL SOCIETY.

The report direct to State Board. The Pomona (county) Grange is composed of members of the subordinate granges. The Secretary, Theo. Cubberly, reports purchases, through this channel, during the year amounting to \$7,000, divided between the several granges somewhat as given.

Our county board has been prosperous, holding its meetings regularly with large attendance and marked interest. In answer to the question sent out, "The greatest yield of any cultivated crop and the conditions under which grown," we have the following: Corn, grown by J. F. Phillips, of Lawrence, 106 $\frac{1}{2}$ bushels on an acre; ground surveyed by a practical surveyor and corn weighed; land, Stony Brook bottom; soil, three feet deep alluvial; the only fertilizer used, lime; planted, 3 feet 9 inches by 2 feet 9 inches; three kernels to a hill.

One member from Hopewell reports corn at the rate of 101 bushels to an acre; another 90 bushels; another reported a yield of 3,000 bushels of Yellow Globe turnips from 6 pounds of seed.

An experiment with corn carried on by J. M. Dalrymple, of Hopewell, under supervision of State Experiment Station, and reported to our Board, is of practical interest. We find from this table, herewith presented, that nitrate of soda and muriate of potash produced the greater yield.

FIELD EXPERIMENTS WITH FERTILIZERS ON CORN.

BY J. M. DALEYMPLE, HOPEWELL, N. J.

FERTILIZERS.				YIELD PER ACRE.				
KIND		Pounds per Acre.	Cost per Acre.	Pounds Good Ears.	Pounds Poor Ears.	Bush. Shelled Corn.	Pounds of Stalks.	
1	Nothing.....			3,350	1,100	63.50	3,350	
2	Nitrate Soda.....	150	\$4 50	4,340	630	71.0	3,450	
3	Superphosphate.....	350	5 25	4,200	510	67.20	3,400	
4	Muriate Potash.....	150	3 38	4,450	270	67.30	3,500	
5	{ Nitrate Soda.....	150	\$4 50 5 25 }	9 75	4,900	280	73.50	3,550
6	{ Superphosphate.....	350						
7	Nothing.....			3,200	1,000	60 0	3,150	
8	{ Nitrate Soda.....	150	4 50 3 38 }	7 88	5,330	280	79.60	4,300
9	{ Muriate of Potash.....	150						
10	{ Superphosphate.....	350	5 25 3 33 }	8 63	5,050	210	75.10	4,000
11	{ Nitrate of Soda.....	150						
12	{ Superphosphate.....	350	5 25 3 38 }	13 13	5,000	230	74.50	3,940
13	{ Muriate Potash.....	150						
14	Plaster.....	400	1 50	3,150	1,280	49.0	3,000	
15	Fine Barnyard Manure.....	20 loads.	30 00	4,200	560	68 0	3,350	

This corn was planted on old stalk ground, from which, last year, was harvested a good crop of corn.

Variety of corn planted, Cloud's Early Dent. Planted in rows 3½ feet wide, one grain every 18 to 20 inches apart.

Soil, red shale formation. High, gently sloping to the south.

Character of soil, loose.

The soil is best suited to corn, wheat, oats and potatoes.

Planted May 16th, 1884. Sowed two-thirds of the fertilizers designated for each lot broadcast, and harrowed them in, after the corn was up and showed nicely in the row. Put the balance, one-third, of fertilizers, mixed with three times its bulk of mellow earth, and applied it about the hills.

May 29th, had heavy frost and very cold; killed most of the leaves, so that a new growth formed.

June 9th, lot No. 2 looked best; No. 11 and No. 7 next.

July 12th, lots No. 2 and No. 11 look best.

Practiced level culture throughout the season with the Perry spring-tooth cultivator.

September 27th, cut up the corn.

October 10th, husked the corn and weighed it.

At our meeting last February, a committee was appointed to invite and arrange for the annual meeting of the State Horticultural Society in Trenton. Our invitation was accepted, and a meeting held with us by the society, successful, we believe, in all respects.

At our February meeting, also, the topic "Little Things in Farming—Items of Profit and Waste Sometimes Overlooked," was presented, and a paper was prepared and read on the same by one of our members, so full of practical suggestions and helpful hints we have thought it worth while to present it with our report.

LITTLE THINGS IN FARMING.

BY J. M. DALRYMPLE.

MR. PRESIDENT AND GENTLEMEN—The "Little Things in Farming—Items of Profit and Waste Sometimes Overlooked." In the first place allow me to mention that there is a want of decision among farmers. A great deal of labor is lost to the world for want of a little courage. Every day sends to the grave a number of obscure men, who have remained in obscurity only because their timidity has prevented them from making a first effort, and who, if they only had been induced to begin, would, in all probability, have gone great lengths in the career of fame. The fact is, that in doing anything in the world worth doing, we must not stand on the brink thinking of the cold and danger, but jump in and scramble through as well as we can. It will not do to be perpetually calculating risks and adjusting nice chances; such a course did very well before the flood, when a man could consult his friends upon an intended experiment for one hundred and fifty years, and live to see its success for six or seven centuries afterwards. But at present, life is too short to think about adventuring; if you do, the opportunity slips away. The very period at which a man chooses to venture, if ever, is so confined that it is no bad rule

to urge the necessity, in such instances, of a little violence done to the feelings, and efforts made in defiance of strict and sober calculation.

As an element of success in making the farm pay, good, sound common sense will do more than any other one thing to put money in the farmer's purse. To start with there must be a fixed, objective point, and a determination to follow some well-defined plan of action until the result desired is accomplished.

To go into the raising of a special crop, or the breeding of choice stock, and then change to something else just when the experience acquired becomes valuable, will always keep whoever follows such a course on every road except that which leads to prosperity. A fixed and definite line of action formed on the experience of the most successful farmer in this country will, with due diligence, make the farm pay. As a rule the farmer, who thinks, studies, reason and can tell you why he pursues a certain course, is the one who will be found to complain the least in regard to hard times. It should not be the desire to get over too much land on too limited capital. It may be safely set down as a principle, that the number of acres cultivated should depend upon the capital. I have often been impressed with the belief that the most successful farmers are those who lie awake and mature plans for the coming day or week, while others sleep. Farmers should have an eye to business. The farmer who will never think whether it is better to feed his corn to stock and thereby increase its value threefold, than to sell it for almost a song, should not expect to succeed. Thought must precede muscle in order to make farming, or any other business, profitable. And here let me say, stop the leaks, take care of your tools. The great tax imposed on farmers for implements to cultivate and harvest their crops, might be avoided if farmers took even reasonable care of their implements. No class of men give so little attention, or take so poor care of the implements they use, as do the farmers. If engineers gave so little care to the locomotive and stationary engine under their charge, they would not last half as long as they now do, while accidents would be more frequent. If the machinery of a factory received no better care than the machinery of a farm, the operatives would be out of employment a large proportion of the time. Farmers very well know that wood-work swells and shrinks with the changes of the atmosphere, and many think it only a question of time when the house or shed shall be built where the scattered tools will have a permanent home. This waiting to provide

the needed shelter is the most expensive kind of saving. The elements are all the while at work depreciating the value of the wood. The new farm-wagon that is left out exposed to the weather, even if painted the paint soon wears off, the sun cracks paint and wood, the heat expands the cracks, the dampness enters the openings, and decay begins; the joints become loose, the fellows and spokes shrink in the dry weather, the hubs crack, and the tires must be set often to keep the vehicle in running order, unless it be an iron wagon, some of which are now being introduced. So far experience has proved that these wagons have stood the test of exposure since their first introduction, and I would especially recommend them to farmers who do not house their wagons. Farmers often over-estimate the expense of a tool or wagon-house. If they have timber or building stone on their farms, very little money need be expended to put all running-gear under cover. A roof, and siding to keep out rain, is the main thing. Flooring is not necessary; the bare earth under all wooden wheels, if kept dry, will answer. I heard an intelligent farmer say, recently, that he thought there was wasted, on the average farm of 100 acres, from \$300 to \$500 annually, in carelessness and waste of "little things." Men best qualified to know, state that farm implements receive more injury during the time they are not in use than during the period when they are in operation. This loss is the result of carelessness; it deserves to be ranked as a sin rather than classed as an act of omission; it is one of the causes of hard times that could easily be prevented. Now, every farmer realizes the value of manure, and very few make intelligent and persistent effort to save the greatest possible amount of it. During the winter thaws the discolored water which runs away from many barn-yards tells its own story of lost fertility.

I know a farmer who lives very near me that has allowed his cattle, some sixteen head, to go all winter to the brook, about one hundred yards distant, for water. These cattle stand shivering in the lane and fence corners, meanwhile dropping their manure where hungry crops can never get it, thus helping along the wasteful process. I would ask, where is the farmer who would not get out of his wagon to pick up a ten-cent piece? or, if he found a hole in his pocket, and that a dime or a quarter was slipping out occasionally, would he not see to it that the hole was mended? Why is it, then, when manure has only to be put on land to bring cash, that there is so much of it let go to

waste? Stop the holes in your barn-yards, through which dimes and quarters are daily slipping away.

Now, as to some small items of profit that are sometimes overlooked on the farm, I mention a circumstance that came under my own observation. The apple crop was very light, and early in the season they began to show signs of decay. I decided that, as we had an American evaporator, I might save the greater part of those apples by drying them, which I did, and also, at the same time, evaporated a lot of peaches. Evenings the farm-help would all be set to work preparing green fruit for the evaporator, which, after being once filled, we had no more trouble with than to keep up the fire. Now, in this way, through the fruit season, without inconvenience to the other farm work, we dried fruit to the amount of \$65.55, which would otherwise have been wasted. Now you will notice that the sale of this evaporated fruit was equal to the raising of a little more than four and one-half acres of oats, allowing an average of forty bushels per acre. Poultry may also be kept with profit. A gentleman not far from me kept eighty hens last year, and the products sold from them amounted to \$379.85, a little more than the interest of a farm of ninety acres, costing \$70 per acre. It is good economy for farmers to mow out the fence-corners of fields which have been planted or sown with grain. Why? because it will pay for hay; it will also subdue all kinds of foul grass and weeds. It is economy for every farmer to own his own tools, and not depend upon borrowing. It will pay to have the first break in the harness mended. It will pay to build cheap gates instead of the old-fashioned bars, and, by so doing, save much valuable time. It will pay to paint the house. It will pay to have wood and water handy. It will pay to supply your wife with all the labor-saving machinery. It will pay to furnish the center-table with the leading agricultural journals, newspapers and periodicals of the day. It will not pay to poison the minds of your children by allowing them to have free access to the trashy literature in circulation. It will pay to plant and cultivate fruit of all kinds. Good fruit is a comfort and convenience, of which every farmer should have an abundance. It will not pay to live a score or more of years on a farm and have no fruit.

Make use of the knowledge of your neighbors; farmers should club together, if for no other purpose than mutual protection against the various impostors and swindlers that too often find them an easy

prey. A farmer who knows that his neighbors will make common cause with him in such cases can more effectively resist the demands of sharpers than when alone and unaided.

"He is a public benefactor who makes two blades of grass grow where only one grew before," is a trite but true adage. All those who are laboring to this end are doing a good work. Every man who helps organize and carry on an agricultural society for disseminating information is helping increase the blades of grass and the ears of corn. Now, gentlemen, these are some of the little items that should be looked after, as I understand it. We sometimes undertake a crop and let go to waste that which we have already. By taking care of this first, we will have more money in the end.

Success in any business depends much upon the individual, the exercise of good judgment, forethought, the application of means to the end sought.

At our June meeting a resolution was passed with reference to the removal from our public roads, all briars, foul weeds, etc., by the overseers thereof, and to prevent, under penalty, placing of refuse or garbage of any kind in the highways of the State. A committee was appointed and copies of the resolution sent to the different organizations of the State. Favorable responses have been received from some of these. It was hoped by us that such interest would be taken in the matter that a bill would be formulated at this meeting of the State Board and presented to the Legislature for enactment, as would effectually remove the nuisance and injury to agriculture referred to.

At our November meeting a fine and large collection of fruits, vegetables, grains and other things was exhibited, the bulk of which was for the New Orleans exposition. Mr. Wm. R. Ward took charge of this exhibit.

CATTLE, HORSE AND HOG DISEASE.

The general condition of farm stock is now and has been good throughout the year. Two cases only of pleuro-pneumonia have been found near Hightstown. Hog cholera has occurred in quite a large number of herds in Hopewell township, also a few cases in Lawrence. Two cases of glanders in horses have been recently reported in Trenton.

Our Board have thought it would be of great benefit to all con-

cerned if a system of visitation by delegates could be established among the county boards. A resolution covering this point will be presented at this meeting.

There are three townships in the county having no local organization. If the farmers in such localities could realize the benefits that would accrue from an active, energetic organization in their midst, we believe they would not be long without one.

Taking leave of the past, we set out upon the new year. Amidst the general depression, let us as farmers and fruit growers *go forward*, securing and utilizing all possible aids to success.

MONMOUTH COUNTY.

MONMOUTH COUNTY BOARD OF AGRICULTURE.

(Organized August 19th, 1884.)

OFFICERS.

<i>President</i>	JOHN STATESIE	Colts Neck.
<i>Vice President</i>	JOHN H. DENISE.....	Freehold.
<i>Treasurer</i>	J. H. WYCKOFF.....	Marlboro.
<i>Secretary</i>	D. D. DENISE.....	Freehold.

DIRECTORS.

DIRECTORS:	
D. A. STATESIE.....	Marlboro.
D. A. VANDERVEER... ..	Manalapan.
EDWARD T. BEEKMAN.. ..	Middletown.
CHARLES M. BRUERE.....	Upper Freehold.
LIVINGSTON DUBOIS... ..	Manalapan.
<i>Delegate to State Board</i>	D. D. DENISE.....Freehold.

MONMOUTH COUNTY CROP REPORT.

BY D. D. DENISE.

In accordance with an act of the Legislature, Monmouth County Board of Agriculture was organized August 19th, 1884. The board has been unable to get a good attendance, though several meetings were called. The farmers of Monmouth, thus far, have manifested but little interest in organizations for the purpose of advancing agriculture, therefore, we are unable to make a report which will do full justice to the county.

The yield of wheat was a little below the previous year, which was exceptionally large. Several fields yielded from 30 to 37 bushels per acre. The largest yield that I know off was grown by W. S. Combs, of Freehold, 41½ bushels per acre, of the Martin Amber variety. Rye crop good, but acreage very small. J. H. Baird, of Marlboro, reports from 5½ acres, 176½ bushels of rye, 17,405 pounds of straw. Corn crop good and very sound; yield from 40 to 90 bushels per acre. Oats not much grown. Crop light, and much damaged from

heavy rains at harvest time. The potato, which is grown the most extensively of all crops, and is the pride of the county, came up poorly, and many were replanted and some were abandoned; still the crop was large, many large fields yielding from 240 to 350 bushels per acre. The largest that I am able to report was grown by W. S. Combs, 281 bushels on one-half acre, or 562 bushels per acre. Hay was not an average crop, but secured in good condition. H. W. Buck, of Marlboro, reports 19,970 pounds on two acres, 15 pounds less than 5 tons per acre, and sold for \$199.70. D. A. Vanderveer grew 18 11-20 tons on 5 acres. Apple crop good, but prices very low. Many orchards were sold to parties in the city, which realized the grower the most profit. Pear crop very poor. Peaches are grown some, and are on the increase, as many trees have been set in the past two years. Last season the crop was not large, but realized a handsome profit to the grower. Small fruits, consisting of strawberries, blackberries, raspberries and grapes, were good. D. A. Vanderveer reports 13,003 pounds of grapes on one acre. Melons and tomatoes, a fair crop. The products of the soil of our county are becoming somewhat varied, on account of the increase of population along our shores, causing a demand for small fruits and vegetables, which reward the grower better than grain. The raising of poultry is becoming quite extensive, and with proper attention is quite remunerative. Monmouth has not the notoriety that some of the neighboring counties have in raising large hogs. C. M. Bruere reports the weight of 30 pigs, about nine months old, an average of 311 pounds, the heaviest 418 pounds. There are seven canning factories, which have put up the usual amount of goods, but do not realize the profits of former years. Two creameries, which are doing a good business, are carried on with success. The milk business is increasing by a growing demand for it at our shores, and many are turning their attention in this channel. There are three granges, which have increased their membership considerably. Monmouth Grange reports the following as an average of their crops :

Wheat, bushels per acre.....	26½
Corn, " "	61
Rye, " "	17
Oats, " "	26
Potatoes, " "	184
Hay, tons "	1½

Take the crops as a whole, there has been a good yield.

MONMOUTH COUNTY AGRICULTURAL SOCIETY.

BOARD OF DIRECTORS FOR THE YEAR 1885.

WM. SPADER,	THOS. E. MORRIS,	GEO. F. WARD,
N. S. RUE,	S. B. OVIATT,	C. D. B. FORMAN,
GEO. W. BROWN,	C. D. HENDRICKSON,	JAS. H. BUTCHER,
L. F. CONOVER,	J. HENRY DENISE,	W. H. DAVIS,
JOHN W. PARKER,	HAL. ALLAIRE,	THEO. AUMACK,
EDWARD MARTIN,	CORNELIUS ACKERSON,	J. F. FIELD.
JOHN V. N. WILLIS,	C. H. BUTCHER,	

Officers will be elected on February 14th, 1885. The annual fair probably held during the usual week in September.

In looking over the operations of the Society for the year ending January 1st, 1885, it affords me pleasure to note the fact of the gradual improvement in our exhibition, both as to the class and extent of same, and that the whole foreshadows the future of the Society as occupying a prominent position in the front rank of like institutions in this State, which our county is entitled to and the management have labored for with marked results for so short a time.

STATEMENT OF TREASURER.

RECEIPTS.

Balance in hand, account of 1883.....	\$409 22	
Loans	1,300 00	
For entrance fees.....	1,552 00	
For stand and ground rents.....	1,045 50	
For gate money.....	4,268 90	
For sundries.....	649 80	
	<hr/>	\$9,225 42

EXPENDITURES.

For permanent improvements.....	\$1,120 87	
For current expenses (premiums, printing, &c).....	6,875 45	
For notes in bank.....	1,000 00	
For account expenses of former years.....	105 45	
	<hr/>	9,101 77
Balance in hand		\$123 65

Total indebtedness of the Society, January 15th, 1885..... .. \$7,785 45

D. Augustus Vanderveer, of Manalapan, N. J., was awarded first premium for the largest yield of Concord grapes on one-half acre of ground, viz., 7,002 pounds.

D. Augustus Vanderveer, of Manalapan, N. J., was also awarded first premium for the largest yield of hay from 5 acres of ground, viz., $18\frac{1}{8}$ tons.

In all, our management and, we believe, the stockholders of the Society feel greatly encouraged with the future outlook.

GEO. F. WARD,
Secretary.

MIDDLESEX COUNTY.

MIDDLESEX COUNTY FARMERS' CLUB.

OFFICERS FOR YEAR 1884.

<i>President</i>	J. V. D. CHRISTOPHER.....	New Brunswick.
<i>Vice President</i>	SAMUEL BLIST.....	New Brunswick.
<i>Secretary</i>	C. E. D. PHELPS.....	New Brunswick.
<i>Treasurer</i>	A. D. NEWELL, M. D.....	New Brunswick.

EXECUTIVE COMMITTEE.

JAMES M. WHITE. J. R. WILLIAMSON, MATTHEW SUYDAM.

Delegate to State Board.....GEORGE W. THOMPSON.....Stelton.

CROP AND SOCIETY REPORTS FOR 1885.

There is little especially noteworthy in the life of our club or county coming within the province of this report. The protracted drought of the summer, and depressed markets of the fall, admonish us that the "most useful employment of man" has its vicissitudes.

The exhibit at one of our fall meetings, although not as large as might have been expected, indicated that we are not tending backwards.

Comparing the year with that immediately preceding it, no striking progress is observable. In the retrospect of ten or a dozen years, however, the writer sees long strides in advance. Agricultural thought and practice, intensive culture with improved implements, a more liberal use of fertilizers, is rapidly changing the methods of farming, and the character of the products.

The fertilizer man has become as ubiquitous as the tree peddler, and as persistent as a book agent. And to his industry, in some degree, we are indebted for the increased use of commercial fertilizers; and even the wise minority, who could not be mellowed by the genial

smile of the agent, are now seeking in the phosphate bag for what they failed to find at the lime-kiln or in the barn-yard, especially after selling hay by the ton and corn by the bushel.

A few are beginning to inquire into the rationale of depending upon A, B or C brand as a specific for their fields, just as they are learning to abandon the gimlet and abjure hollow-horn as cause and cure of all cattle diseases. Advanced farmers ask their fields what is the matter, and apply nitrogen, phosphoric acid or potash in consonance with the reply.

Special fertilizers thus supply the lacks or leaks of the barn-yard, and enable us to change our rotations and diversify our products, and this in the direction of a local market. But here unfortunately comes in the Cobden Club. We cannot compete with the depletive husbandry and paupering machinery of the West, the marl-fed farms of Monmouth, nor the limestone soils of York State, and the sunny South, who glut our markets with corn and wheat, inundate us with potatoes, and overwhelm us with vegetables and small fruit. We sell in the home market at wholesale, and buy at retail the products of other counties, States and Nations. Verily, farming in Middlesex county is an unprotected business.

What are you going to do about it? Well, the writer sees no way out of the trouble except by the barbarous law of retaliation, and in this direction we have made two or three spasmodic efforts. Twice we tried a canning factory, once a creamery, but the fire-fiend or some other evil *genie* seemed to preside over the destiny of them all hitherto.

While there are many good and proper reasons why farmers should be quiet, peaceful, tax-abiding citizens, yet there are cases in which meek-eyed submission is cowardice and quiescence a crime. It is therefore with diffidence that I counsel *lex talionis* arbitration, and advise my brother farmers of Middlesex county, seeing that your home market is invaded, to respect no county, State or National lines; carry the war offensive and defensive into the enemy's territory; run your factory (farm) to its utmost capacity; produce the best goods; put your best products in the best shape (and if to be carried to a distance in the smallest bulk) upon the best market; be the best farmer in your neighborhood; be true to your God, your calling and to yourself, you cannot then be untrue to others.

Moral: No farmer gets rich who sells by the ton and buys by the pound.

MORRIS COUNTY.

MORRIS COUNTY BOARD OF AGRICULTURE.

OFFICERS FOR THE YEAR 1884.

<i>President</i>	AUG. W. CUTLER..	Hanover.
<i>Secretary</i>	WILLIAM F. ELY.....	Madison.
<i>Treasurer</i>	WILLIAM H. PARKHURST.....	Hanover.

BOARD OF DIRECTORS.

WM. F. ELY,	HENRY W. YOUNG,	FRANK P. COOK,
LYMAN J. FISH,	WM. F. HANDCOCK,	JOHN CLIVER,
BENJ. B. GRISWOLD,	SAMUEL M. HOPPING,	SAMUEL BRANDT.

Delegate to State Board... ..WM. F. ELYMadison.

NOTE.—No report received from this board since last year.

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SALEM COUNTY.

WEST JERSEY AGRICULTURAL AND HORTICULTURAL SOCIETY.

OFFICERS FOR 1885.

President.....OMAR BORTON.....Woodstown.

VICE PRESIDENTS.

JOHN W. DICKENSON,

M. J. PAULDING,
JOHN HAINES.

ROBERT VAN METER,

Secretary.....JAS. D. LAWSON.....Woodstown.

Treasurer.....Dr. L. A. D. ALLEN.....Woodstown.

EXECUTIVE COMMITTEE.

ISAAC C. DUBOIS,

JOSHUA REEVES,

ROBERT HEWITT,

ISRAEL A. HEWITT,

CLARK PETTIT,

GEORGE COMBS,

SAMUEL T. LIPPINCOTT,

CHARLES R. BURT.

Delegate to State Board.....M. J. PAULDING.....Woodstown.

Annual fair at Woodstown, September 16th and 17th.

CROP AND SOCIETY REPORTS.

BY JAS. D. LAWSON.

Another successful year for us just past.

Our annual fair was held two of the warmest days of the season, making it very unpleasant for visitors from a distance. Yet, with this severe drawback, we had the most successful fair ever held.

The Executive Committee have ordered still further improvements, another new building 40 by 110, also pens for swine and sheep; with our large addition of stock pens built last year, making our grounds ample for a large stock display.

Our crops were almost up to our usual standard, excepting the hay crop, which suffered severely in June. The continuous dry and hot

weather in September ruined all of our pastures. We have had but little hog cholera in Salem county, although the price of pork is almost nothing.

In reviewing the cattle interests in the section of our State covered by the West Jersey Agricultural and Horticultural Association, we find a marked change in the numbers and quality of the cattle fed by the farmers.

The county of Salem has been long noted for the pride the farmers have shown in the superior quality of the cattle fed by them. But within the past few years the price of fat cattle has been so affected by the marketing of dressed Western meat that many of our heaviest feeders have abandoned feeding for beef. And stimulated by the increasing dairy interests through our creamery, as well as the demand for pure fresh milk from our neighboring cities, Philadelphia, Camden, Cape May and Atlantic City, many farmers have substituted for their yards of sleek steers stalls filled with improved grade milch cows, until the number of cows has increased to more than three times their former numbers, and in quality much superior to those formerly owned. Averaging in yield of milk, in many instances, quantities a few years ago only equalled by individuals in the herd.

At our first fairs the exhibits were confined almost entirely to common native cattle, creditable in numbers but inferior in quality. Within a few years choice herds of thoroughbreds have been added to improved cows. A fine herd of Holsteins owned by Henry W. Austin, near Woodstown, and Jerseys, by Mr. Springer, near Salem, Edwin Colson and Dr. M. J. Paulding, of Daretown, Salem county.

Already the influence of these choice thoroughbreds is being impressed upon the native grade, and in the near future an increase of richness must be felt that will add materially to the butter product of this district, where the soil and pasture grasses are so peculiarly adapted to the production of a fine quality of milk and butter.

SOMERSET COUNTY.

SOMERSET COUNTY AGRICULTURAL SOCIETY.

(Organised 1870.)

OFFICERS FOR 1885.

<i>President</i>	Col. A. S. TEN EYCK	Somerville.
<i>Vice President</i>	CALVIN CORLE	Neshanic.
<i>Secretary</i>	WILLIAM S. POTTER	Somerville.
<i>Treasurer</i>	L. R. VREDENBURG	Somerville.

BOARD OF DIRECTORS.

ADRIAN ALCOTT,	PETER DEWITT,	HENRY S. LONG,
H. A. VANDERBECK,	DAVID C. VOORHEES,	JOHN R. LEWIS,
D. D. STELLE,	ALBERT VOORHEES,	JAMES CRAIG.

Delegate to State Board.....WM. S. POTTER.....Somerville.

Annual fair for 1885, at Somerville, September 29th and 30th and October 1st.

Number of stockholders, 600.

SOCIETY AND CROP REPORT.

Our society holds an annual exhibition ; have no meetings through the year except the annual stockholders' meeting, which is held the third Saturday in February. For many years Professor Cook has been present. We hold the meeting in the court house. Farmers from all parts of the county, whether stockholders or not, come to the meeting. The court house is usually filled. Farmers seem anxious to hear Professor Cook. He is always interesting and practical in his remarks. His subject this year is "The New Jersey Agricultural Station and its Work in Somerset County."

For the first time in many years we met with rain for two days continuously at our fair. We had an excellent display in all depart-

ments. Premiums and expenses had to be paid; our receipts were not quite equal to the emergency, so we came out a few hundred dollars short. Our society is in good condition, however, and we have very little debt compared to the value of our grounds and buildings, which are nearly all new.

We hope for more favorable weather next year.

Our crop reports: For wheat and rye about an average crop, perhaps about 18 bushels per acre.

Corn crop not quite up to the average; about four-fifths of a crop.

Oats, about three-fourths of a crop. Harvested in good condition.

Hay, average crop in some parts; only two-thirds in other parts.

Potatoes, average crop. Suffered by drought in June. Peaches, average crop. Apples, average crop.

Our farmers are somewhat discouraged by the low prices of grain. There is very little trucking in our county. Some farmers engage quite largely in milk, and find it profitable. Two creameries in our county have not been a success. One was burned, another has been erected in place of it, but not in same location—near Neshanic, on the Lehigh Valley Railroad.

Farms which ten years ago would sell for \$100 per acre, and five years ago for \$70 or \$80 per acre at fair public sale, now only bring from \$50 to \$60 per acre. Our farmers feel that their attention must be turned to something else than grain raising at these prices. What is to be done to make farming profitable in Somerset county? is now the all-absorbing question among our farmers.

UNION COUNTY.

UNION COUNTY BOARD OF AGRICULTURE.

[Organized March 6th, 1884.]

OFFICERS FOR 1885.

<i>President</i>	NOAH W. PARCELL.....	Union.
<i>Vice President</i>	DENNIS C. CRANE.....	Roselle.
<i>Secretary</i>	CHAS. C. MCBRIDE	Elizabeth.
<i>Treasurer</i>	ROBERT WOODRUFF..	Westfield.

BOARD OF DIRECTORS.

DENNIS C. CRANE.	DENNIS LONG.	FRANK HOSINGER.
E. P. BEEBE.	D. B. WADE.	

An effort was made a year ago to re-organize the Farmers' Club, which has had an existence well on to a score of years, so that it would conform to the suggestions of the law under which the State and county boards are formed. But some of the members did not take kindly to it, so that those who were favorable decided to organize a separate body. The most of the old club have joined the new board, and it is likely soon to be the only agricultural society in the county. Union county has many farms and farmers for its size, and compares favorably with other counties in the State in the yield of its products. The quality of its land is good, especially for hay, milk, vegetables and fruit, which are its chief productions. It has an unexcelled home market for all it can raise. In some parts it has suffered from speculators who induced the old tillers of the soil to part with their acres. Many of these acres, once well fenced and productive, are now lying out to commons and overgrown with foul weeds. This, we think, is a subject that ought to engage the attention of the State Board.

Our crops the past year have been, taking them altogether, above the average. Corn was a fair crop, and ripened well. Hay and pasture good. Oats generally good, rainy weather spoiled some in harvesting.

Potatoes turned out well. A large acreage of cabbage was planted, but owing to the drought during the late summer and fall did not come to much. The cabbage worm also added to the distress. The fruit crop was good, strawberries, raspberries and blackberries, and especially apples. But the prices generally were low. Ensilaging fodder crops is growing in favor among our milk raisers. Mr. Warren Ackerman, of Scotch Plains; Joseph W. Cory and Albert Drake, of Westfield, are among those who have large pits.

WARREN COUNTY.

WARREN COUNTY FARMERS', MECHANICS' AND MANUFACTURERS' ASSOCIATION.

OFFICERS FOR THE YEAR 1884.

President.....GEORGE K. MCMURTRIE.....Belvidere.
Treasurer.....ISRAEL HARRIS.....Belvidere.

BOARD OF DIRECTORS.

GEORGE K. MCMURTRIE,	JOHN V. DESHONG,	ISRAEL BRANDT,
NELSON VLIET,	JAMES CYPHERS,	JOSEPH FISHER,
	ASA KINNEY.	

WARREN COUNTY SOCIETY REPORT.

The Farmers' and Mechanics' Agricultural Association of Warren County have not held a fair for two years past, yet much interest is manifested by our farmers in agriculture, stock and fruit. Our association has done great good in the improvement of stock of all kinds. Our county has carried off many valuable premiums at the State Fair for cattle, and especially for sheep, swine and poultry.

The crop of wheat, rye, corn, buckwheat, oats and potatoes has been an average crop, and satisfactory to the farmers.

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STATE OF NEW JERSEY.

THIRTEENTH ANNUAL REPORT

OF THE

New Jersey Board of Agriculture.

1885.

PRINTED BY ORDER OF THE LEGISLATURE.

TRENTON, N. J.:
JOHN L. MURPHY, STATE PRINTER.

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STATE BOARD OF AGRICULTURE.

OFFICERS FOR 1886.

PRESIDENT.

HON. EDWARD BURROUGH.....Merchantville, Camden County.

VICE-PRESIDENT.

WILLIAM R. WARD.....Newark, Essex County.

TREASURER.

FRANKLIN DYE.....Trenton, Mercer County.

SECRETARY.

WILLIAM S. TAYLOR.....Burlington, Burlington County.

EXECUTIVE COMMITTEE.

PROF. GEO. H. COOK.....New Brunswick, Middlesex County.

D. D. DENISE.....Freehold, Monmouth County.

MORRIS BACONGreenwich, Cumberland County.

To the General Assembly of New Jersey :

In accordance with the provisions of the act creating a State Board of Agriculture, adopted April 22d, 1884, I have the honor to present the annual report for 1885.

WM. S. TAYLOR,
Secretary.

BURLINGTON, Burlington County, February 15th, 1886.

STATE BOARD OF AGRICULTURE.

THIRTEENTH ANNUAL MEETING.

MASONIC HALL,
TRENTON, N. J., February 2d, 1886. }

The meeting was called to order by the President, Hon. Thomas H. Dudley, at 10:40 A. M.

The Chair.—The hour appointed for the meeting of the State Board of Agriculture has arrived. It gives me great pleasure, and I have no doubt all the other members of the Board feel the same way, to see so many here to-day at the commencement of our meeting.

With many of our farmers book farming and experimental farming are looked upon with disfavor. Some of our farmers believe in the old ways of doing the same things their fathers did before them, in following the same rules their fathers did in their manner and time of planting, in the rotation of their crops, in the seeding and in the harvesting, and they cannot believe that there can be any good derived from books and experimental farming.

Fortunately for the farmers and for the great agricultural industries those mistaken ideas are passing away, and with the enlightenment and the intelligence of the age new ideas have grown up among them, and people have begun to learn that sometimes by experimenting and by what has been written on the subject of agriculture much benefit to the industry could be obtained.

The gathering here to-day I construe as indicating a great change in the sentiments of the farming community, which is not only of importance to themselves and to this Board, but of importance also to the great industrial interests of agriculture throughout this and our sister States.

The Executive Committee have prepared programmes of the exercises which are to take place during the two days' sessions of this Board.

Mr. Taylor, Burlington.—Mr. President, before beginning with the programme, I move you that a committee of three be appointed to wait on the Governor of the State, the President of the Senate, the Speaker of the House and the respective bodies, and extend to them an invitation to attend this meeting.

Motion carried, and the Chair appointed :

Mr. Taylor, Burlington ; Prof. Cook, New Brunswick ; D. D. Denise, Freehold.

The Secretary read the report of the Executive Committee, which was unanimously approved.

REPORT OF THE EXECUTIVE COMMITTEE.

Gentlemen of the State Board of Agriculture :

This will be the thirteenth annual report of the New Jersey State Board of Agriculture since its organization. At first the growth of this Board was slow, but those who aided in its organization and have been active in its councils ever since have always been sanguine of its ultimate success and usefulness. Its annual meetings now bring together the best and most enlightened farmers, fruit growers and cattle breeders in our State. The deliberations, discussions, and county reports published by this Board annually, are extensively copied by the agricultural press, and have a wide reading, and exert a healthy influence and practical reforms among the farmers of our State. The Executive Committee and officers you elected a year ago have during the past year, in performing their duties, endeavored to extend and broaden the field of usefulness for which this Board was originally organized. This report is meant to give you a brief outline of the labor and efforts of your officers and Executive Committee in performing their duties during the year just closed, with the earnest hope that what they have done may meet with your approval. Before entering on a detail of these matters, we desire to call the attention of the members to some facts which will more or less interest every farmer in our State. From an agricultural standpoint, the year 1885 has not been a prosperous or profitable one for the farmers, fruit growers or gardeners of our State. The Winter of 1884 was the most damaging in plant-life that we have had for twenty years. The fall of snow was unusually light ; the mercury ranged low, with frequent high winds, proved very disastrous to the crowns of Winter wheat,

rye and clover, and the strawberry, raspberry and blackberry were badly injured from the causes named. The strawberry crop suffered the most. It is safe to say that the crop of strawberries would not average one-third throughout the State. One grower, who marketed in 1884, 1,050 bushels of strawberries, and from the same surface in 1885 the yield was only 320 bushels. With a short crop and high prices the loss would be partially made up. But this was not the case in 1885, for the prices of all kinds of farm and garden produce ranged lower than they have for twenty-five years, with the single exception of potatoes, and the staple crops ranged about nine per cent. lower than they did in the year previous, that is, 1884. While the causes of these low prices may be traced and duly accounted for, even this knowledge would not make up the losses of the year, or make the farmer's bank account any better than it is, even if such problems were solved and placarded over the whole State.

There is a large part of the arable land in our State devoted to the growth of corn, wheat and oats. According to the estimates just received from the Department of Agriculture, at Washington, D. C., the following figures are given for the year 1885 for these three cereal crops, with the yield per acre of each one. There was planted in corn in our State in 1885, according to the authority named, 350,370 acres, giving a total yield of 11,212,000, or an average yield of thirty bushels to the acre. In wheat there was planted 143,097 acres, which yielded 1,395,000 bushels, or at the rate of ten bushels to an acre in round numbers. There was devoted to the oat crop 133,451 acres, the gross yield of which was 3,556,000 bushels, which gives an average of about $37\frac{1}{2}$ bushels to the acre. The average based on those figures is much lower for corn and wheat than in former years, but the average for the oat crop is higher than usual. We give these facts in order to call the attention of the members of this Board, and the farmers of our State, to the difference in yield of the same, and other crops, grown in different parts of the State, under what may be termed improved systems of culture. The State has for a number of years offered cash premiums for farm, orchard and garden crops. These premiums are awarded by a State premium committee. This committee consists of seven persons, three of whom are selected from this Board, three from the State Agricultural Society, with the Governor of the State, which makes the full committee. The competitors for these premiums have to send to the committee a surveyor's certifi-

cate, and affidavits of two disinterested persons, who were witnesses, to verify their accuracy. This committee has just made their awards on the subjoined schedule of crops, which are as follows:

FARM CROPS.—WINTER PREMIUMS OF 1885.

ENTRY MADE BY—	ADDRESS.	Number of acres.	CROP.	TOTAL YIELD.	YIELD PER ACRE.	First premium.	Second premium.
J. H. Denise.....	Freehold...	5	Wheat.....	217 $\frac{1}{2}$ bushels...	43 $\frac{1}{2}$ bushels.....	\$25 00	.....
J. H. Herbert.....	Marlboro...	5	Rye.....	220 " ".....	44 " ".....	25 00	.....
J. C. Du Bois.....	Manalapan	5	Rye.....	191 $\frac{1}{2}$ " ".....	38 $\frac{1}{2}$ " ".....	25 00	\$15 00
J. H. Denise.....	Freehold...	5	Corn.....	547 " ".....	109 $\frac{1}{2}$ " ".....	25 00	.....
L. Du Bois.....	Manalapan	5	Corn.....	484 " ".....	96 $\frac{1}{2}$ " ".....	.....	15 00
S. B. Wills.....	Monmouth	5	Clover hay...	18 $\frac{1}{2}$ tons.....	2 $\frac{1}{2}$ tons.....	25 00	.....
J. H. Denise.....	Freehold...	5	Timothy hay.	11 $\frac{1}{2}$ " ".....	2 $\frac{1}{2}$ " ".....	25 00	.....
Henry Campbell...	Freehold...	1	Apples.....	.....	250 barrels.....	20 00	.....
Henry Campbell...	Freehold...	1	Raspberries...	.....	150 bushels.....	20 00	.....
John Van Doren...	Manalapan	1	Grapes.....	.....	18,151 lbs.....	20 00	.....
J. H. Willey.....	Keyport...	1	Grapes.....	.....	7,825 ".....	.....	10 00
Henry Campbell...	Freehold...	1	Potatoes.....	.....	2 $\frac{1}{2}$ barrels.....	20 00	.....
H. D. Oliphant...	Orange.....	$\frac{1}{2}$	Carrots.....	279 bushels.....	1,116 bushels.....	15 00	.....
John H. Cooper...	Pompton...	$\frac{1}{2}$	Carrots.....	225 " ".....	900 " ".....	.....	10 00
Jos. Erickson...	Camden...	$\frac{1}{2}$	Tomatoes.....	210 " ".....	840 " ".....	15 00	.....
L. Du Bois.....	Manalapan	$\frac{1}{2}$	Tomatoes.....	174 " ".....	696 " ".....	.....	10 00
Ralph Cooper...	Pompton...	$\frac{1}{2}$	Onions.....	180 " ".....	720 " ".....	15 00	.....
John H. Cooper...	Pompton...	$\frac{1}{2}$	Onions.....	162 " ".....	648 " ".....	.....	10 00

These large yields come before the committee verified as stated, by reliable witnesses, accompanied by affidavits to indorse their truthfulness, with a written description of the methods of planting, fertilizing and cultivation. The difference in yield per acre of corn, wheat and other crops in the list just read, and the average of the State, gives food for reflection, and a wide margin for increasing our acreage products. As these premium crops will be printed in our annual report, the members of the Board will have the opportunity of reaching their own conclusions, and at the same time making an effort this year to equal if not surpass these large crop returns.

Immediately after the last annual meeting, the Secretary set to work with a will to put the matter in proper shape for the printer, and on the seventeenth of February, ten days after the meeting, the whole of the matter was revised and edited and placed in the printer's hands. The printer then promised that on the fifteenth of March the edition of the report would be printed and delivered at the State House. But we regret to say that printers' promises are not always reliable, and in this instance they came wide of the mark. By frequent and urgent appeals, we were able to get 500 copies of the edition of 8,000 delivered to

the members of the Legislature the first week in April, the day before the Legislature adjourned. It was ten days before the balance of the edition was delivered at the State House. The Executive Committee were then called together at Trenton, and the Secretary furnished a full list of the number of copies for the different County Societies and County Boards. The Assistant Treasurer then promised the Executive Committee to send out these copies at once. But instead of doing this, he kept the list and reports for three weeks, and then shipped the balance of the edition of 6,000 copies to the Secretary, at Newark, with the statement that, owing to the fire at the State House, they could not do as they had in the past, ship the reports from Trenton, and save thereby time and expense. The Secretary sent to the County Boards the number of copies they wanted, three days after the reports reached Newark. We mention these facts in explanation as to why the cause of delay, and hope no such delay will occur again.

In accordance with the twelfth section of "An act to organize and establish a State Board of Agriculture," in the laws of 1884, page 241, which says: "That in order to collect and disseminate reliable and valuable information, it shall be the duty of the Executive Committee of the State Board of Agriculture to apportion to the State Horticultural Society, and the several County Boards organized under this act, sums of money as they may deem adequate for this purpose." When the report was printed the Executive Committee met at Trenton and examined the State and county reports, and they decided that the distribution of money should be made on the practical merits of these reports. On this basis the following sums were ordered to be paid to the following State and County Boards :

State Horticultural Society.....	\$200 00
Burlington County Board of Agriculture.....	40 00
Monmouth County Board of Agriculture	15 00
Camden County Board of Agriculture	5 00
Cumberland County Board of Agriculture... ..	10 00
Hunterdon County Agricultural Society.....	10 00
Mercer County Board of Agriculture	15 00

Making the total for these reports..... \$295 00

The Secretary was requested to inform the County Boards that this plan would be followed for the reports prepared for our next annual report. This information was sent out by a circular early in the year,

and it is likely to be of great value, as an incentive to get more and reliable statistical and useful information embodied in the County Board reports. To aid in this work the Secretary of the State Board was requested by the Executive Committee to prepare a blank form for crop returns, to be distributed among the farmers, in order to get more accurate information on subjects bearing on agriculture and kindred branches. The blank form prepared, while yet crude and imperfect, as first experiments are likely to be, will be amended and made better adapted to our wants this year. The form, as it stands, contains the best features of all of the blank crop forms published in this country. Each of the County Associations was furnished with these forms for distribution, and in counties with no County Boards the forms were sent to prominent farmers, with the hope of awakening an interest in the subject that would lead to the formation of County Boards in those counties. This committee earnestly appeals to the representatives now attending this session from counties having as yet formed no County Boards, that they will, on their return, aid in doing so at once. During the past year there have been two new County Boards formed, one in Hunterdon and one in Middlesex. These two, with those already organized, give us ten County Boards, leaving eleven counties without any.

The following is a list of the County Boards, with the date of their organization, the names of the Secretaries, and their post office address:

COUNTY.	DATE OF ORGANIZATION.	SECRETARY.	ADDRESS.
Atlantic.....	December 6, 1882.....	Z. U. Matthews.....	Hamonton.
Burlington.....	December 30, 1882.....	Henry I. Budd.....	Mt. Holly.
Camden.....	November 23, 1882.....	Geo. T. Haines.....	Haddonfield.
Essex.....	November 16, 1882.....	J. H. Baldwin.....	Livingston.
Gloucester.....	January 25, 1883.....	Geo. H. Gaunt.....	Paulsboro.
Hunterdon.....	November 14, 1885.....	E. M. Heath.....	Locktown.
Mercer.....	March 20, 1883.....	Franklin Dye.....	Trenton.
Middlesex.....	November 2, 1885.....	J. M. White.....	New Brunswick.
Monmouth.....	August 19, 1884.....	D. D. Denise.....	Freehold.
Morris.....	.....	Wm. F. Ely.....	Madison.
Union.....	March 6, 1884.....	Dennis C. Crane.....	Roseile.

Your Executive Committee have the pleasure of announcing to you that the English sparrow is no longer protected by law. The substance of the resolutions passed at the last annual meeting are now a law of the State, and will be found on page 272, Laws of 1885. The committee have also had passed by the last Legislature a supplement to the law of 1884, under which this Board is now working. The supplement reads as follows: "That from and after the passage of this

act, the County Board of Agriculture in each county of this State, the State and Pomona Granges of Patrons of Husbandry, the State Agricultural Society and the State Horticultural Society shall each have power to select and appoint two directors to the State Board of Agriculture, who shall hold that office for two years, and that the State Board of Agriculture shall have the right and power to elect their officers and committees, or any of them, either from among the directors or from among any of the members of the Board who are not directors."

This act was approved March 10th, 1885.

The Executive Committee has prepared a programme for this meeting, which they hope will meet your approval and approbation. They have fewer papers and essays than they had on their programme a year ago. This change was in accordance with the express wish of a large number of the members of this Board, and in keeping with the judgment of the committee. The present programme will afford more time for a general discussion on all topics which come up before the meeting. The discussions will be reported in full, and they will be printed in the annual report.

When the subject of "Dairy Interests" is under discussion, it may be well to take up the matter of the present method of evading the law in the sale of oleomargarine, under what may be termed false pretenses, the details of which will be stated when the subject is under discussion. Another and very important matter is that of carrying on field experiments with special fertilizers, and keeping an accurate record of the same to be reported at these annual meetings. Such experiments, properly and intelligently conducted, would be of great value in helping to solve many knotty questions now unsettled.

Again, we have in our State a large surface of the very best land devoted to fruit raising. Among the lists of fruits which succeed in our State the pear is prominent. At present the largest profits are only realized by extending its season of ripening. This has been successfully accomplished by several large growers of pears in Essex county by means of retention houses, and ice as the agent. A description of the process would prove a profitable topic, if the meeting finds time to reach it before adjourning. With this brief history of the year's doings, and suggestions submitted for your consideration, with the earnest hope that the present meeting will be a success, we remain,

Yours very respectfully,

EXECUTIVE COMMITTEE OF 1885.

Judge Holcomb.—In regard to the question of the English sparrow, I am very much interested. If the members would care to hear it, I would like to tell them my plan for getting rid of these pests. They became so bad and so troublesome that I tried this plan: I took cracked corn and soaked it in strong brine and scattered it around where the sparrows could get at it. In a few days the corn all disappeared, and the sparrows, too.

The Secretary.—While that subject is up I would like to say one word. I understand there is an effort being made to repeal the law that was passed last year. In fact, the subject was under discussion in the Senate last night. I, as a fruit grower, would not like to see this present law interfered with at this time.

The Chair.—The Chair would like to hear the subject discussed. I think we should be heard on this subject before the Legislature before the subject is acted upon. Let the members speak their views on this subject fully and freely.

Mr. Williams, Essex.—I for one do not want to see the sparrow law repealed. I was very glad to see that the Legislature has passed a law about the sparrows. He is a very troublesome cuss [Laughter]—that is about what he ought to be called. You can't call him anything else. I understand there is to be an effort made to place the robin in the same class. If so, I would like to know what charges they can bring against him. If he has committed or been caught in any crime I would like to know of it. I think this is also a matter which may be profitably discussed here, with the sparrow question. The robin is included, as I understand it. The sparrow is among those we are now allowed to destroy. I understand there has been a law introduced in the Legislature at this session to place the robin on the same footing—in the same category as the sparrow. I hope this question will also be discussed while we are discussing the sparrow question.

Mr. Rogers, Essex.—I should be very sorry, indeed, to see the sparrow protected. In the West, but a short time ago, the cry among the farmers was that the sparrows must go, because they were making such depredations in the wheat crops, and other crops—that in fact they were becoming an alarming evil. I think there is no bird which causes more trouble to the seed and fruit grower and agriculturist than this same sparrow. As to there being any reason for the repeal of this bill passed last year so as to protect the sparrow again, I know of no reason, and if there is a reason why he should be placed on the list of the protected birds I don't know what it is.

Mr. Stiles, Sussex.—In reference to the robin question, I think there was a bill passed last Winter to protect song birds from slaughter, for the reason that a great many people came over into New Jersey and killed many of these birds to be used for the ornamentation of women's bonnets. This destruction has been carried on to such a very great extent that only last year in the New York State Horticultural Society an effort was made to get their Legislature to pass a law like that of New Jersey, to protect the song birds. The law passed in New Jersey is the first of its kind in the United States, and it is a good law. I learned last night that there has been a bill offered repealing this law, so far as the robin is concerned. I do not agree with those who claim that the robin is a bad bird, and the worst I ever saw of his doings was the picking off and eating of dangerous insects. The great trouble with some of these people who are crying out about the robin being a destructive bird or a dangerous bird is due to the fact that they make good pot-pie. They want him on the list of game birds, so they can get him for pot-pie. This is where the trouble lies, and if this Board sees fit to take action on the sparrow question, I think we should also take some action jointly on the robin question.

Judge Holcomb, Hunterdon.—I hope we will take some action, especially on the sparrow question. A short time ago one of the farmers in my neighborhood took the trouble and pains to ascertain that there were 800 farms in the county. Put the estimated damages by sparrows to each farm at \$3.00, multiply the \$3.00 by 800, and you will see the immense amount of damage done in our county by the sparrows. Three dollars is a very low estimate, and I do not think it would begin to pay me for all the damage they have done on my farm.

Mr. Crane, Essex.—I would like to ask upon what ground the repeal of this law is asked for.

The Chair.—The Chair is unable to state the ground for repealing the law—in fact I did not hear until I arrived in town to-day that there was to be an attempt made to secure the repeal of this law. I am surprised that any effort should be made to kill off the robin. He is a very dear bird to me, and I am very fond of having him around my place. I am satisfied, although I am a lover of all birds, that the sparrow is a very great nuisance. I think the law passed making him a bird that might be killed whenever and wherever found was a good law, and a necessary one.

Mr. Forsythe, Burlington.—Mr. President, I would like to say one word in favor of the much-abused sparrow. I think they should be encouraged all that we can. He is a great help to us if we will but see it in the right light. If the farmer has never had any hope of getting rid of his surplus wheat, he can at least hope the sparrow will help him. [Laughter.] To dispose of our crops at a fair price is out of the question, so let us propagate those insects which will destroy our crops. [Laughter.] Let us dispose of our crops in this way and have a short crop to sell at a high price. That is better than a good crop and no sales. [Laughter.] I, therefore, speak one good word for the poor sparrow. [Loud laughter.]

Mr. Dye, Mercer.—I am opposed to this; the sparrow must go. He has driven out the wren and the blue birds and the robins—he has driven them away from my place. We know that the wrens and blue birds and robins are always busy, and we should endeavor to encourage them, but we put up boxes for the wrens and the sparrows drive them out and occupy the boxes themselves. Let us do away with the sparrow.

Mr. Burrough, Camden.—I am glad that this subject has been discussed so fully, and that so much information has been brought out, and so far from seeing the sparrow protected it is very evident that it is the sentiment of this Board that the sparrow is to have no protection—that he must go.

I wish to say, sir, that there is hardly a man within the sound of my voice who is more fond of birds than I am, or who is a greater lover of our native songsters. But this sparrow is a foreigner; he is not only a foreigner, but he is a depredator. [Applause.] He is driving away all our native songsters. Why, gentlemen, I prefer the crow to the sparrow. [Laughter.] As regards the sentiment of this Board as to the bill now before the Legislature, I would offer the following resolution:

Resolved, That in the estimation of the State Board of Agriculture the law of 1885, exempting the English sparrow from the protection of the insectivorous bird laws, meets our earnest and emphatic approval;

Resolved, That we hereby protest against any repeal of said laws, and we call upon our Legislature to aid us in their extermination.

Mr. Minch, Cumberland.—There is a misunderstanding in regard to this law we have been discussing. I was present last night in the Senate and heard the proposed bill discussed at some length. The

intention of the bill is entirely different from what this Board has supposed; it is to protect the American and not the English sparrow. The bill does not refer to the English sparrow, nor to protect the robin. It makes the robin a game bird.

The Chair.—I do not altogether understand you. Is there an English and an American sparrow? I was not aware that there were two different birds.

Mr. Minch.—I understand that last year when the Board wanted the protection withdrawn from the English sparrow they supposed that the American and English sparrows were the same bird, and that was where the confusion arose. They are two birds, and the law is only referring to the American sparrow and has nothing to do with the present law in regard to the English sparrow.

Mr. Rogers.—There is a great difference between the American sparrow and the English sparrow. The American sparrow is an insectivorous bird. The English sparrow, on the other hand, is not.

The Chair.—I am obliged to you for the information. I was not aware that there was an English and an American sparrow.

Are you ready for the resolution presented by the gentleman from Camden?

Mr. Williams.—That we may protect the robin also?

The Chair.—Is not the robin protected by the law as it now stands without any further action being necessary to secure his protection?

Mr. Williams.—I offer as an amendment to that resolution, that we are opposed to the repeal of the present law, or any portion of it.

The amendment was accepted.

Mr. Haines, Burlington.—I move to refer this resolution back to a committee for explanation, and let them present it at a future session of this Board.

The motion was carried.

The Chair appointed on this committee :

Mr. Burroughs, Camden; Mr. Williams, Essex; Mr. Rogers, Essex.

Mr. Haines.—The Executive Committee, in making their report, have referred to another very important matter—a matter that is of importance not only to us, but to all the farmers throughout the United States. The question I refer to is that of the manufacture of oleo-margarine or deceptive butter. Their reason for referring to this so strongly doubtless comes from a very significant fact, and that is that

the manufacture of this spurious article resembling butter is largely on the increase—a business which must pay handsome profits, as is easily shown by the large number of men engaged in it.

The Chair.—I would suggest that this subject would come up properly to-morrow morning, when the subject of dairy farming comes before us for discussion.

The next business on our programme is that of the appointment of the committees. There are two committees—the Committee on Credentials and the Committee on Nominations for Officers. How will you have these committees appointed?

A Member.—By the Chair.

The Chair.—The Chair will appoint as the Committee on Credentials:

Mr. Burrough, Camden; Mr. Lippincott, Burlington; Mr. Williams, Essex.

As a Committee on Officers:

Prof. Cook, New Brunswick; H. I. Budd, Burlington; D. D. Denise, Monmouth.

The next business on our programme will be the reports of County Boards by their delegates, and also State and County Societies.

The State Agricultural Society is first in order. Their Corresponding Secretary, Mr. Quinn, is here.

The Secretary.—Gentlemen, I will be very brief, as this report will appear in our annual report when printed. The State Society for the past year has been very successful—beyond precedent. We had the largest number of entries we ever had, amounting to over 6,000 in the different departments. The attendance was also very large and very gratifying, and the general satisfaction was very good. (See Reports.)

The Chair.—The State Horticultural Society, Mr. Williams.

Mr. Williams.—I have no written report. I will state in a few words that our annual meeting was held in this city on the 29th and 30th of December, with a very large attendance. The meetings were attended with a great deal of interest, and, judging from the remarks heard since and at the time of the meeting, the number of papers read and the topics of interest discussed, these were also of great interest to those present, and I think our report will be exceedingly valuable. We also had a very interesting lecture on pear blight and its prevention. The most important thing in this report, which will

most directly interest every consumer, was the discussion of the necessity of a national system of weights and measures.

The Chair.—I think it would be better to bring it up at a later period.

The committee that was appointed to wait on the Governor and the Legislature has returned and will please report.

Mr. Taylor.—Your committee extended the invitation to the Governor, who regrets that his health and the pressing nature of his duties will prevent his acceptance.

We also extended the invitation to the President of the Senate and to the Speaker of the House.

The Chair.—The Cranberry Growers' Association will be the next to report. Hon. A. J. Rider. (See Reports.)

The Chair.—The next society is the State Grange. (See Reports.)

The Secretary.—The Jersey Red Swine Breeders. (No one present.)

The Chair.—Atlantic County Board. (No response.)

The Chair.—The Egg Harbor City Agricultural Society, Mr. Hoffman. (See Reports.)

The Chair.—This is a very important report, and the industry at Egg Harbor City is also a very important one.

I feel sure that it would be to the benefit of every one to see this wonderful place, this Egg Harbor, which its residents have turned into a veritable garden. It would benefit all of us and every one outside of the Board. It would be not only of interest to you as becoming acquainted with their people, but it is certainly one of the most surprising things to me what they have done with this land. From the barren, sandy land they have made a beautiful and fertile garden; from an unproductive land they have turned it into an immense vineyard, showing what energy can achieve towards reclaiming the immense tracts of "barren lands" or "pines" in the lower part of this State. From being what we used to call barrens or pines, it has bloomed forth as very productive. Every Jersey farmer knows what these lands have been, but I will venture to say that few, if they have not seen them, would believe such a change possible. All this change has been brought about by the use of fertilizers. By their use they have turned it into a garden.

The Secretary.—Burlington county, Mr. Budd. (See Reports.)

The Chair.—Prof. Cook having reason to resign from the Committee on Nominations, I will appoint in his stead Mr. N. W. Parcell, of Union.

The meeting adjourned until 2:30 P. M.

AFTERNOON SESSION.

Convened at 2:45 P. M., in Masonic Hall, Trenton, Hon. Thomas H. Dudley, President, in the chair.

The Chair.—Before proceeding with our business there is a matter which claims our attention, in which I think you are all interested, and that you will agree with me we should notice.

I see on the table below me a large number of very fine exhibits of corn, potatoes and other things. It has been our custom heretofore to appoint a committee to report at a later session. As a matter of course, we have no premiums to offer, but we should take notice of them in some way, and this can best be done by appointing a committee to examine and report on them before the close of our sessions. I only wish there were more of them—that our farmers showed more interest in the sessions of this State Board of Agriculture. I wish they could be induced to make these exhibits larger—that every farmer would bring something and thus swell the exhibit. I would like to see them doubled, trebled and quadrupled, as they might well be were all our members to take the interest in them they should take.

Last year we appointed a committee of three, I will follow the same rule this year and name the following gentlemen to act as a Committee on Exhibits:

Judge Parry, Burlington; Mr. Baldwin, Essex; J. W. Dickinson, Salem.

We did not get through this morning with the call of the counties, but our programme provides that the President's address shall take place at 2:30 and that the paper and discussion on hog cholera shall follow. I think it is best that we follow the programme. This is all the more important because Mr. Lockwood, who is to address you on this subject, will have to leave early, so, with your permission, we will suspend the calling of the counties until the discussion is over.

The first business, therefore, will be the President's address. (See President's address, immediately after the minutes.)

Mr. DeCou, Burlington.—Mr. Chairman, before we go on with this hog cholera, I would like to ask you a question about this India wheat to which you have referred in your address.

The Chair.—I shall be pleased to answer any questions you may put in regard to it.

Mr. DeCou.—I would like to know how these people in India produce this wheat so cheaply. If there are so many people there, even though they raise such large quantities of wheat, it would seem to me as if they must also use immense quantities for home consumption. I think the population is something like 250,000,000, is it not? We can understand why they should have surplus wheat where it is all land and no population, but we cannot understand how they can produce wheat so cheaply there as compared with other lands.

The Chair.—I have been looking into this matter pretty thoroughly, and I will give the gentleman all the information I have been able to obtain upon the subject.

In the first place, the population is about 253,000,000 of people. The larger proportion of these people are miserably poor. Then they live very cheaply, few of them using wheat, the great mass of them living on rice, and you must know they can live very cheaply on rice. Then their clothing is very inexpensive—nothing in fact but one single garment—that is all they wear. The larger proportion of them never taste wheat at all.

Again, the lands in India are just as rich as anywhere else—as they are in the West. There are thousands and millions of acres that have never been cultivated at all. Lands larger in extent than the New England States, the States of New Jersey, New York and Pennsylvania, where there is not a mile of railway or any other system of transportation to the seaboard—no facilities of any kind.

A man can buy immense tracts of land, and when he can hire his labor done for six or seven cents a day, you can see how he can produce wheat to compete with our high-priced land and high-priced labor. He can prepare his land very much cheaper, he can put in his seed very much cheaper than you can put it in, even with your most improved machines.

Suppose you purchase a reaper at a cost of \$150, and the interest, without counting repairs, is \$9 per year, and then the average life of the machine is only about five years, or say that it lasts even a little longer—now you can see how easily they, with their low-priced labor, can compete with us. Take these figures and you will see how they can produce their crops so much cheaper than we can. They can hire men for from five to seven cents a day while you pay many times this and use your high-priced machines, and even then cannot produce your wheat as cheaply as India.

Last year I placed my estimate at ten cents a day, but I have, in conversation with Prof. Watrous, found that this is much too high, as he assures me that the price is never more than seven cents per day. "Why" says he, "I can get thousands of men at five cents a day." When a man can hire labor so cheaply, when he wants no machine except the plow to plow his ground, and the harrow to harrow it, remember he dispenses with all those expensive machines; when he can do all this it is a matter of little wonderment that he can produce wheat cheaply.

These men are paid say five cents a day wages; out of this they also find themselves. Just think of it. [Laughter]. I made a computation based on this five cents a day wages myself and find that what it will cost you for putting in say ten acres of wheat, sowing, reaping, binding and threshing it, will not be less than \$7 an acre, or \$70 for ten acres, at the wages paid in New Jersey, one hundred acres at this rate would cost \$700. I may be mistaken somewhat in these estimates, but I think I am pretty near the mark, as in my early days I was a farmer and I have a little piece of land down in Camden county yet, as the gentleman from Burlington knows.

I have not gone into this subject to provoke political controversy among the farmers, but to open their eyes to what may be looked forward to with certainty. When India can place her wheat on the docks at Liverpool for 70 cents per bushel she can underbid America all the time—we cannot possibly hope to compete with her. Were it not for the protective tariff on wheat, India would even send it here to our own country and underbid us, but this 20 cents per bushel tariff has thus far sufficed to keep it away. However, if we expect to keep this foreign wheat away from our shores we can only do so by increasing this tariff.

Mr. DeCou.—You say they can produce this wheat and deliver it in England for 70 cents a bushel; what can they bring it to us for? how much would it cost in San Francisco or New York?

The Chair.—By way of the Suez canal they could now bring this to us, despite the tariff of 20 cents per bushel, for about \$1 per bushel. Now you can see where the American farmer stands, as compared with the prospects in the near future for the Indian farmer. Remember there are thousands and thousands—yes, millions and millions of acres of the very best farming land in India that have never yet been opened to the world—where there are no transportation facilities

of any kind. When we think of the possibilities of this immense country, as it comes into competition with us with the building of new lines of railroad and the completion of new lines on their water ways—when we think of this, we get some idea of the competition the American farmer may expect from the products of India. I repeat that the only thing we can do to keep their grain out of our country—away from our shores—is to increase the protective tariff on this wheat. I do not mention this, as I said before, to excite a political controversy, but I am merely placing the matter before you in its true light—and I have gone over it very carefully, gentlemen, let me assure you.

Wheat is selling in London to-day—or at last advices, a few days since—wheat was selling in London for 90 cents a bushel. This is Indian wheat; of course, many people say it is not as good as ours—that it does not make as good flour as American wheat; that it does not contain the substance that the American wheat does. I have inquired into this to satisfy myself, and have obtained statements from millers in London in regard to it. They have been very obliging and have given me all possible information. They do not acknowledge that the India wheat contains less substance or makes a poorer quality of flour than our wheat, and they say it compares very favorably with the brands of American and of Russian wheat.

Probably, gentlemen, I am going too far with this, but it is a matter of very great interest to me, and a matter to which I have given considerable thought.

When you find such a man as Mr. Benson—the gentleman with whom I have corresponded, a very excellent and worthy man in every way—when he tells me they sell ten times the amount of India wheat they sell of the American, I can but acknowledge that the India wheat must be very good indeed, or they would not deal in it. I have given up theories long ago, and I have now come down to solid facts—they are the safest. We are all alike in these matters. If I see my friend Mr. Parry selling a new kind of strawberry, and it is meeting with big sales, I make up my mind at once that it must be a good thing, and I want it at once. So it is, gentlemen, with this India wheat—we can see that immense quantities of it are being placed on the English market at prices at which we cannot hope to compete, and we make up our minds it must be of some good, or people would not buy it; in any event it is hurting our foreign trade, and through

the loss of the demand for our wheat in foreign markets it is hurting the sale of our American wheat.

Mr. DeCou.—I am much obliged for the explanation.

The Chair.—The next business on our programme is a paper on hog cholera and other diseases, to be followed by a discussion after the paper of Mr. Lockwood.

I take great pleasure in introducing to this State Board of Agriculture Mr. Lockwood, who has made the subject of hog cholera a very careful study, and who will give us very valuable information. As this disease is growing, not only in this State, but throughout the country, this is a subject of special interest to all of us, I think.

Mr. Lockwood, D.V.S.—I do not propose to go into this matter too deeply, but simply to give you a description of this disease, and the signs by which it may be known in its early stages, so that farmers whose animals are taken with it may be able to see what it is; for the term "hog cholera" as applied to these diseases of the hog is not fully understood, or perhaps not as well understood as it might be by our farmers generally, and it is very likely to convey an erroneous impression.

When a farmer nowadays sees one of his hogs taken with purging, &c., he has an idea that the animal has the hog cholera, but this may not be so, and is very often a mistake.

The disease itself is very likely to settle on and affect the brain, spine, or some one particular organ of the hog. The skin also becomes discolored. No matter what organ is affected, this discolorance of the skin is likely to be present. In hogs of a light color this discolorance may be easily noticed, showing itself in large blotches on the hide of of the hog.

In regard to the purging and vomiting of the hog, it is only in the last stages of the disease that this manifests itself. These are the real symptoms of hog cholera, and it is only in the last stages of the disease that they show themselves. It is from these symptoms that the disease takes its name. The disease is also largely affected by the weather, and then hogs may get well, but they generally linger along for a month or so and then die. When first taken they generally continue to eat well and heartily, and there is not much about them that is noticeable. It is not well to stint them while sick, and their diet should be of the very best, and they should have the best possible care. Tincture of belladonna is a good remedy for them.

In administering medicine to a hog, it is well to remember that he is different from other animals, in that you cannot pour it down his throat by elevating his head, because he will choke.

In using the remedies I have prescribed in my paper, it is well for the farmer to use the simplest, as it is impossible for the farmer in the average country districts to procure at his drug store the ingredients for anything at all complicated in this direction.

Mr. Haines.—Would you recommend the use of lime?

Mr. Lockwood.—I would keep lime scattered about in the pen.

In this connection let me say that there is one thing I have found in the treatment of poultry, and that is that poultry affected with the cholera have been known to be entirely cured by the use of a plenty of lime scattered about in their runs and places where they most frequent. I have tried this—I have scattered lime freely all about the yard, and have cured the poultry without using any other medicine at all.

Let me also say that where this has been done with hogs they have not been afflicted with this disease at all. Remember one thing of importance—never be violent with your animals in giving them the necessary treatment for disease—in fact, never be violent with your animals at all. There is more than the medicine to be considered in this connection. Never be violent to any of your animals, under any consideration.

In using the homeopathic medicine referred to in my paper, it is better to do it in the way I have mentioned, always. If I have twenty hogs to dose I mix one hundred drops of the medicine—five drops to each hog—in the pail of swill. Each hog will then have sufficient. Where the preventive treatment is used there is no doubt that the animals can be saved. Where the disease is allowed full sway or allowed to run on, I don't suppose there is anything that will save them. (See paper, "Hog Cholera.")

The Chair.—It is contemplated, according to the programme, that we shall have this matter fully discussed, and I think the matter one that is of vital interest not only to the farmers in this State, but all over the United States.

Mr. Lockwood.—If there is any one here whose hogs have had the disease, and where symptoms have appeared which I have not mentioned here, I shall be glad to hear of them.

I have only been in this business two years, although during the last

year I have had considerable of this disease to treat. I have found many different symptoms even in the same herd of hogs, and in the same pen. Many of them cannot eat; some have the throat swollen; others have other trouble; some have little or no trouble; others again are without appetite and will eat nothing. All the different symptoms I have mentioned I have studied and gone over very carefully.

Mr. Stiles.—Are you certain that this takes effect on the different organs as you have mentioned—on the brain, spine, &c.?

Mr. Lockwood.—Yes, sir.

Mr. Stiles.—Have you discovered the germs from which this disease is said to come?

Mr. Lockwood.—No, sir; we do not know much about it except that it is really a form of blood poisoning. I have had one case of some three or four months' standing in which the blood was completely poisoned.

Judge Holcomb.—I would like to ask the doctor one question. You say lime is a preventive; would not flowers of sulphur be a preventive also, and would this not be a good thing to feed to healthy hogs?

Mr. Lockwood.—If fed flowers of sulphur great care must be exercised to prevent the animal catching cold, as it renders an animal very susceptible. I would also recommend the use of a little carbolic acid, say once or twice a week.

Judge Holcomb.—Suppose a man has thirty or forty hogs; and when feeding them, gives them a pound of sulphur mixed in their feed, would this be injurious to the hogs? Are the doses too large? I know people who have done this and have known them to feed their hogs a pound of sulphur a day before killing. They say that this makes the entrails nice and clean and cleans them out, making them nice and white. I ask this question because I am interested.

Mr. Lockwood.—If the hog is kept warm and dry I do not think it would hurt him. It would hardly harm him so long as he was not too much exposed.

Judge Holcomb.—I have thirty hogs and they were afflicted with hog lice; I took three pounds of sulphur and sprinkled it all over the whole place. When the hogs laid in the straw the sulphur acted and it was good-bye to the hog lice. I have never seen that my hogs have been harmed by this as yet.

Mr. Forsythe, Burlington.—Can you tell us how the disease is

propagated from one hog to another, from one farm to another, or from one herd to another? This is a question that was discussed here last year and different theories were advanced.

Mr. Loekwood.—We suppose it is from some germ in the atmosphere; we cannot tell what is the cause to any degree of certainty or exactness.

Mr. Forsythe.—Dr. Hunt tells me that this germ works along on the ground from place to place and is propagated in this way. Unfortunately I suffered considerably from this disease last year and the year before. I lost, about a year ago, over a thousand dollars worth of hogs, so I have paid for some experience in this line. This disease first broke out south of Pemberton, on a farm belonging to Mr. Butterworth; from there it went to my brother's farm. This was two years ago. That was all there was of it then. In September it broke out again in my neighborhood. It was communicated from the stock of one of my neighbor's to mine. These hogs of his were in a field adjacent to the field where my hogs were. I changed my hogs as soon as I heard his had the disease, but it didn't do any good. my hogs caught it too, and I lost over a thousand dollars worth of fine hogs.

This disease appears to affect some of these hogs in different ways; the hair all comes off of some of them, and of some it don't.

In some of the hogs it attacks them while small, and I have seen it in hogs weighing over 500 pounds. I have seen the hogs cured of the disease and get perfectly sound and grow fat, weighing 500 pounds and more. There would appear to be nothing objectionable about the hog at all after he got over it; I would as willingly take that hog, or the pork from that hog, as from any I ever saw.

Some people claim that when a hog has once had it he is inoculated and will never have it again. Some also claim that if they have pigs after having the disease there is no danger of the pigs ever getting the disease—they are inoculated with it and won't get it because their mothers had it.

I believe the disease is pretty well stamped out in Burlington county now. I don't think I know of a single case.

The question with us is where this disease came from. No one appears to be able to give an explanation. It came from no one knows where, and it has gone back again to the same place. [Laughter.]

The question with regard to the injurious effects of this disease may be various. We all have different opinions on different subjects, but we should all be of one mind as to the question whether or not we have had enough of this hog cholera. I think, myself, at the present prices of pork, we had better have some more hog cholera and less pork, for then we would get something for our pork. [Loud laughter.] Pork at \$4.75 is worse than the hog cholera.

Mr. Lockwood.—The best treatment for this disease is always the preventive treatment. Whether the disease be with the hog, with cattle, the horse, or with the human race, the preventive treatment is always the best. We are satisfied that an ounce of prevention is always better than a pound of cure.

If we will be a little careful in our treatment of the animals we will have but little trouble in either preventing or eradicating the disease as it appears in its incipency. I know of many people who gave the cattle and horses brown mash and carrots all the year through with this idea.

Mr. Forsythe.—When my hogs had this cholera they would die right along every day. So I put them into my sheep-yard and commenced giving them Spanish brown and sulphur. Many of those that were left were sick, some of them pretty bad. All were more or less diseased. I kept pushing the sulphur into them and I didn't lose any more hogs at that time.

The Chair.—Did they all get well?

Mr. Forsythe.—Yes, sir; but I bought \$125 worth of pigs at a sale and I brought them home and had them put in the field where I had buried the hogs that had died of the disease, in the first place; it was in a corn field near the house. I did not think of the young ones being in danger from the disease. They were put into this field, and I lost all the pigs.

Mr. Lockwood.—I know where sulphur was tried and had no effect. I am glad to have heard this from the gentleman.

Mr. Forsythe.—Sulphur is fed largely by our farmers. There are more men in Burlington county who feed sulphur than who don't. They give it for the thumps and all kinds of complaints, and it will often make a cure. There are half the farmers in Burlington county who follow this rule.

The Chair.—In what proportion did you feed the Spanish brown and sulphur?

Mr. Forsythe.—When I put the feed in the trough I put in a tablespoonful to each pig.

Mr. J. W. Pancoast.—I should like to hear an expression of opinion as to how the disease was introduced into the State. In Salem county the farmers believe it was started from hog cheese which they bought. By hog cheese, I mean the scraps from butchering establishments, old meat, refuse and stuff of that kind that cannot be used for any other purpose. This stuff is pressed into cakes and sold as hog cheese, and we farmers in Salem county think the disease must have been introduced in this way. Many of our Salem county farmers buy it and mix it with their hog swill.

Mr. Lockwood.—This is one of the questions which has never been answered as yet [Laughter], and one which never may be.

The Chair.—Dr. Miller is present; can he give us any information upon this subject?

Dr. Miller, Camden.—I do not know that I can give anything more than has already been given to the public. This subject has been quite thoroughly ventilated for several years.

Unfortunately, in our section of the country, we have not been so fortunate in the treatment of this hog cholera, as has the gentleman who has just addressed you, Mr. Lockwood. We have been unable to find any panacea for this dreaded hog cholera. We have gone through the whole vocabulary of remedies without finding any satisfactory results. I have been treating hog cholera for the last six or seven years, and have found nothing thus far that is in any way beneficial except sulphur. I have yet the first case to cure.

I must differ with the gentleman who spoke, in regard to the treatment of the hog cholera and the administering of the medicine. I have given the medicine in bulk, and have had no success with it as yet. I cannot see how it is possible that, in the giving of the medicine to the hog, it may enter his lungs if his head is held back. This is a new theory to me.

Mr. Lockwood.—As a general rule, in giving medicine the head of the animal is held back. In my experience this should not be done with the hog, nor in fact should violence of any kind be used in administering medicine to any animal. A cord is often placed around the nose of the hog, and his head is then thrown back. As you know the hog maintains a constant squealing while he is being held, and it is probably this that causes the objection I have mentioned in regard

to holding back the head of the hog in administering medicine. On account of this constant squealing of the hog while he is being handled I have always cautioned people against it.

Dr. Miller.—I would have inferred from the gentleman's paper that he had had practical experience in that line.

Mr. Lockwood.—No, sir ; I never had.

Dr. Miller.—This is something new and unusual to me, and I am very glad the point has been mentioned ; it is worthy of consideration.

Mr. Haines.—Upon a supposition that an ounce of prevention is better than a pound of cure, I have always acted in this matter, and although there are plenty of men who have raised a great many more hogs, and have fattened a great many more than I have, yet I am willing to give my experience in this matter, as I know it to be practical. It has been my rule during the last two years to always keep on hand a can of sulphur, and this the hogs got in their swill. It is not very easy to mix it, but I put it in the swill and stir it up and trust to Providence to mix it up better. [Laughter.] The fowls get some and the horses are also given some of it. We also give our poultry all the coal ashes ; this is a good thing for them.

Our Grange always keeps a barrel of sulphur in the store, and the farmers are using large quantities of it. So far as I know, our township—Medford township—is entirely clear of all diseases among our cattle, our horses and our swine. I think it well to state this. It is due, we think, to this use of sulphur as a preventive.

In former times we used to raise thirty or forty hogs ; you could take an old sow and she would have ten or twelve pigs. It did not make any difference where or how she was kept. It did not make any difference whether she was kept in a snow bank or in the warmest of pens. We never had any trouble of this kind. Whether there is something in the hogs or in our manner of breeding and keeping them, I don't know ; but then there was no trouble such as we now have.

Dr. Hunt.—I look upon the hog cholera question as a matter of a very serious nature. I will not take up much of your time, but wish to throw out a few points. I do not want you to think that we are idle ; I do not want our farmers to think that there is nothing being done in their interests in this direction, for such supposition is a wrong one.

If you will go to Pasteur's laboratory you will find that there has been just as much done in this direction as in any other—just as much for the hog cholera as for any other disease. If you will go to Washington you will find that this subject has occupied their attention there to a very great extent during the past year. They have experimented with a large number of these animals. They have inoculated large numbers of them. They think they have found the long-sought germ which is the cause of this disease of hog cholera. If not the germ, it is certainly one most directly associated with it. As to the matter of treatment, I would like to look at the practical side of the treatment mentioned. I am glad to hear everything in connection with this treatment of this disease in all its phases. I do not consider this of too little interest, for I have never in my experience passed by the commonest thing, the commonest remedy for disease of any kind. When I find a man who has treated fifty hogs successfully, that result to me is very important, and I am glad to have his experience. We want to find out what will cure or prevent, and if we only find that, we are all right. These matters of interest to you are matters of interest to all of us. If we can refer, as I shall be able to do in the course of a month or two, to the recorded evidence of farmers here, one man telling how he has treated his hogs, and another how he has treated his, the remedies used and such matters of interest, and also telling of the separation of his hogs in their pens, the sick from the well, such information can be but of interest to all of us.

In this connection let me say that separation is not enough; if a man can show me that he has separated his hogs, has made no mistake in the transfer of any pail, using the pail for the well hogs which he has used for the sick, and no mistake in the transfer of any trough, using the sick hogs' trough to feed the well hogs, and has not even allowed the same man to attend them, when he can assure me of this, it will be a matter of interest to me to note the result. Such experiences are valuable to us all.

There is another class of experience we want, and that is that of the men who try different remedies for these diseases, noting the results carefully. I must confess that the remedies of sulphur and sulphite of soda are new and original, but we would like the result of experiments with them.

The addition of Spanish brown I am very much inclined to think

a very important addition. It has the alum and iron in it, which, we all know, are such important disinfectants.

In regard to the transmission of this disease, it is very certain that it travels from one farm and from one herd to another. There are also some very curious things connected with this transmission of the disease. For instance, a board fence has been known to stop the transmission of the disease from one herd to another, while the herd of another neighbor, where there was no protection by a board fence, were taken with it.

I have been given an account of a herd of hogs dying in Cape May county which belonged to the Rio Grande Sugar Works. The hogs were located one and a half miles from any habitation; their pens were in excellent order, and there appeared to be no apparent cause for this outbreak in the herd. I have been looking into this myself and know these are facts.

I found that in shipping forty-five live hogs to market six weeks before one of the hogs got away. Although search was made it was not found for some time, but it was finally found in the woods, and, when the disease broke out among the hogs, this was the first one that died. We investigated this matter carefully for a long time without results, but we finally found that this hog that had broken away had been caught and put in a pen in Salem county, where other hogs had died of the disease. This one hog that got away had thus given the disease to the others.

The surroundings of hogs sick with this disease should be looked to. They should not be allowed to get damp or catch cold, as all these things tend to make the disease more virulent, more malignant. Like small-pox, these diseases are made more virulent by the surroundings. Farmers should endeavor to prevent the disease from coming by proper care and treatment, and if it does come they should use the greatest care to prevent it from spreading. They should take it in hand at once. In the use of sulphur and Spanish brown, and in the proper care of the animals, we have familiar remedies or preventives. Some of our farmers go still further than this and use various drugs, using care that no mistakes be made, and that the doses are not taken by mistake by other animals. These are all matters worthy the attention of our farmers, and we want them also to think that the men who are in charge of our department are doing all they can and are making every effort possible to eradicate the diseases

to which their cattle and horses and swine are subject. While our progress is not as great as it could be wished, we are still making some advance. We have been laboring for many years on the dread diphtheria, yet there are many thousands of people who die every year from this disease. We are not looking so much for specifics as for preventives. It is easier to prevent than to cure a case of sickness. I hope we may be able to control the disease and stop its progress, or entirely eradicate it in time. It is only a few months since it found its way into Morris county, or parts of it, while it has been virulent in some parts of this county for seven years, as Dr. Miller very well knows. They are now pretty thoroughly cleared of it.

For the exhaustion of the disease the best thing to use is the preventive remedy, and that is our plan of procedure now.

I have taken up your time long enough; I only wanted to encourage the gentleman.

Judge Holcomb.—Let me ask you a question. Have you ever tried sulphur for the treatment of diphtheria?

Dr. Hunt.—Sulphur has been tried every way. It is one of the very best remedies known and, like all the best remedies, it is being constantly used.

Dr. Miller.—In my experience with hog cholera I have always, whenever I have been called on to examine the diseased hogs, tried to impress on the farmer the desirability of isolating the hogs, the complete separation of the hogs, the sick from the well. I think Dr. Hunt will bear me out in this. Wherever we have done this it has proven a good thing to do. Unfortunately most men will go to the pen and take out the sick animals and leave the healthy animals in the pen, which is full of the disease—leave them in there to become sick also. In hog cholera this does not answer. Something more must be done than taking out the sick animals and putting them in other pens. The proper plan and the only effective one is to leave the sick animals in the pen where they were and take out the healthy animals and place them in another pen. Where this has been done it has certainly proven beneficial in each and every instance. I think that in all diseases of this nature, and in fact in all diseases, as stated by the gentleman who read the paper and as stated by Dr. Hunt, more can be achieved by prevention than if the disease is allowed to spread to the others and develop in their systems.

Judge Holcomb.—The same remedy will apply to poultry that have the cholera.

Mr. Pancoast.—Can we do nothing to stamp out this disease besides using preventives? Is there no way to prevent its introduction or its spreading? Can not the State take some measures looking towards this? We want to get rid of this hog cholera, and it can only be done by united effort. If the reply is in the affirmative—if the State can do anything for us, I would like very much to hear an expression of this Board of Agriculture as to the advisability of asking the Legislature to take some such action as they have taken to drive out the pleuro-pneumonia in cattle. What can be done?

The Chair.—Will Mr. Hunt let us know about that?

Mr. Hunt.—This is a question for the farmers to decide. The truth in the matter is that the government does not wish to do anything in the matter of paying a subsidy for this disease without it is a foreign disease. Such subsidy would of course enable farmers to get rid of the diseased animals, but the disease is not a foreign disease. When such a disease is thoroughly in the country it is generally the opinion of the government that it is unwise for them to make any such subsidy. If the government should adopt such a policy in connection with the hog cholera, and such policy were thoroughly pursued, it would cost the State an immense amount of money. Whether such action is a wise one, and whether the farmers wish to ask the government to do this, is for them to decide. The cost of such action to the State would be very great—so great that it would hardly be thought advisable. But the day you have thoroughly eradicated this disease, then it would be a wise preventive. As it now has such a strong foothold in the country, it can hardly be considered a foreign disease at this time.

Suppose that you have succeeded in thoroughly eradicating the disease, and the next day a herd of hogs comes here from the West, or from another State, and brings the disease back to you again, would you consider it a wise or an unwise action on the part of the government to pay such subsidy? You will see the difficulty in this matter. If the farmers think it worth while—if they think it is best for the State of New Jersey to pass such a law, then well and good. It is not my wish to argue this point, but merely to point out the distinction. There is a great difference between this disease and those which are indigenous.

Mr. Forsythe.—Here we are discussing this hog cholera question. This is not the most dangerous disease, by any means. The greatest disease is the selling price of \$4.75 per hundred. [Laughter.] This is what caps the whole. We want a remedy that will prevent or cure that. [Laughter.]

The Chair.—We will take up now the unfinished business of this morning—county reports.

The Secretary.—Camden county. [Mr. Haines reads paper.] (See Report.)

The Secretary.—Cumberland county. [Mr. Garrison reads paper.] (See Report.)

The Chair.—How old was that peach tree which you say bore such a wonderful crop, and which is of so large a size?

Mr. Elmer, Cumberland.—Fifty-three years old; it was planted by Uriah Loper in 1823.

Mr. Stiles.—What is the variety?

Mr. Garrison.—I cannot tell you the variety, and I do not know much about the fruit itself.

Mr. Stiles.—What is the location of the tree; on what kind of soil is it?

Mr. Garrison.—This tree stands on a low piece of ground; I don't mean swampy ground, but it is not on high ground.

Mr. Stiles.—Has the tree been fertilized?

Mr. Garrison.—I do not think it has.

Mr. Stiles.—Has the tree been pruned?

Mr. Garrison.—I can't answer that question.

Mr. Stiles.—Has it borne a good crop every year?

Mr. Garrison.—I can't answer that question; I know it has borne immense crops—last year it bore a very large crop.

Mr. Stiles.—How was the fruit as to size and taste?

Mr. Garrison.—The fruit was very nice—large and good peaches. I only know this from reliable report; I have never seen the peach.

The Chair.—Have you ever seen the tree in fruit?

Mr. Garrison.—I never have. At one time I had the fortune or misfortune to have the appointment of county superintendent of schools, and frequently drove past that neighborhood, and have seen the tree very frequently, but the schools not being in session when the tree was in fruit, I never saw it while in fruit.

The Chair.—This is certainly something wonderful, and well worth a visit to see.

Mr. Haines.—That field of oats you referred to in your paper—what kind of land was it raised on?

Mr. Garrison.—It is somewhat swampy. It is as rich a soil as there is on the face of the earth. I do not know how long large crops have been grown there, but it is certainly safe to say that 100 bushels to the acre have been grown on it.

Mr. Elmer.—Right opposite to this field there was grown 100 bushels per acre.

Mr. Haines.—What variety of oats were grown on this land last year?

Mr. Garrison.—I cannot tell you the variety; but it was a black oats; I do not know the name of the variety.

Mr. Haines.—Did you see it?

Mr. Garrison.—I saw it just before harvest; it was the finest field I have ever seen.

Mr. Roberts.—What was the crop of corn referred to?

Mr. Garrison.—One hundred and twenty-five bushels to the acre.

Mr. Roberts.—Estimated or measured?

Mr. Garrison.—By actual measurement. The land was measured by a surveyor.

Mr. Roberts.—How about other crops from this field?

Mr. Garrison.—This same field produced from forty to fifty bushels of wheat to the acre.

The Chair.—Captain John Mickle, a man well known in the southern part of our State, told me we all made mistakes in planting out our peach orchards. He said they should never be planted on high ground. He claimed that meadow land was by far the best.

I think we should take this matter up and experiment with it, with a view to finding out the best location for our peach orchards. Let some of you take up this matter and let us see what the results will be. It is certainly worthy of consideration and experiment, and if nobody else will take the matter up I hope my friend Mr. Parry will do so for the benefit of himself and the State Board of Agriculture. Somebody ought to take it up. Possibly some of you have done so; if so, we would be glad to hear from you.

The Secretary.—Cape May County Board. (No one present.)

Essex county. [Mr. Baldwin reads paper.] (See Reports.)

The Chair.—Gloucester county. [Mr. Gaunt reads paper.] (See Reports.)

The Chair.—Hunterdon county.

Judge Holcomb.—We do not know that we are entitled to make any report.

Mr. Bodine, Hunterdon.—Well, we do.

The Chair.—Mr. Bodine will please read his report.

Mr. Bodine.—I think farmers, as a rule, are afraid to let people know how much money they are making, for fear others may wish to embark in the business; at least that has been my experience in endeavoring to make up some facts and gather some information for this paper. [Laughter.] (See Reports.)

Judge Holcomb.—There are two delegates here from the Hunterdon County Agricultural Society. I am one of them and my friend here is another. We came here with some fruit, corn and other stuff, and we have a report to make if it is wanted. We had expected to add a great deal more to this, but before we proceed any further we would like to know whether we are to be recognized as delegates or not. If not, we will have nothing more to say.

Mr. D. D. Denise.—I move that the whole thing be laid before the Committee on Credentials.

Mr. Burrough.—That is the proper course to take.

The Chair.—One word in explanation: This County Board was organized, I think, in November. We have heard the report of the delegates from this County Board. Last year Judge Holcomb and another gentleman came here as delegates from the Agricultural Association, and they were recognized and treated as delegates.

There now appear to be two sets of delegates from two different Societies. The question now is whether these delegates, Mr. Holcomb and his associate, shall be admitted or not.

I take it for granted, under our State law, enacted as it is, that the gentlemen who have been elected and who have come here as delegates from Hunterdon county are entitled, under that law, to be admitted to their full rights as delegates. I also think that the old delegates that are here ought to be admitted. I think our policy should be to admit all we can get in here of our representative farmers—all our best agriculturists, and not restrict at all. Such is the intent and purpose of the law, and I think these gentlemen should be admitted to their full rights as delegates—members of the State Board of Agriculture.

Let us open our doors and admit rather than restrict. The law

passed last year admits everybody as a member of this board who comes here from any agricultural society, whether it is a County Board or any agricultural society, and they are at liberty to participate in all the proceedings of the meeting. They are eligible to office also. You can make them your President if you wish, or you can make them your Secretary. The only difference is that they do not get their expenses paid while in attendance.

The Secretary.—Before the County Board was formed I had a correspondence with Judge Holcomb, and supposing there was no County Board, was very anxious to get a report on the peach crop from Hunterdon county. I sent Judge Holcomb the blanks to be filled out, and asked him to make up the report I wanted.

He therefore has reason to suppose that he will be heard, and had the right to expect to be heard before the Board, when he was asked by one of its officers to prepare a report on the peach crop of Hunterdon county.

Mr. Rogers.—I move you, sir, that he and his friend be admitted as delegates.

Mr. Burrough.—These credentials have been referred to the Committee on Credentials. It is out of order to take any action on the application of these delegates until this Board has the report of the Committee on Credentials.

I would state that we have four delegates with credentials, asking for admission to membership in the State Board, as directors. We have referred this matter to the Executive Committee. There is no question upon this subject. We are ready to make a partial report on these credentials, whenever you are ready to hear our report.

The Chair.—There has been a motion made that the Chair will recognize, that Mr. Holcomb and Mr. Tine be admitted. The motion made by Mr. Rogers is that the other two—I mean the old delegates—be also admitted. If this motion is seconded, the Chair will be glad to put it.

Mr. Lewis, Cranbury.—Have we a right?

Mr. Taylor.—I think it is a question whether we have a right to pay that many delegates from one county. The law states very explicitly whom we shall pay and accept as delegates.

The Chair.—I have not the law before me. Will some of you gentlemen please look it up?

Mr. Burrough.—I understand the County Board takes precedence over all the societies.

The Secretary [reading from the laws].—And be it enacted, That the members of all agricultural and horticultural societies, farmers' clubs, granges of the Patrons of Husbandry and other agricultural associations, shall constitute the membership of the State Board; provided, however, that no member created by this section shall be eligible to any office in the Board, nor receive any compensation from the State for their services.

Mr. Burrough.—I now call for the reading of section eight, to which this is a supplement.

The Secretary [reading section eight].—And be it enacted, That in any county in which there may be at the same time a county board of agriculture and any other agricultural organization, such board shall have the prior right to representation in the State Board, unless for good cause shown the said State Board or its Executive Committee shall otherwise order.

The Chair.—The Executive Committee has the right to order this for good and sufficient cause.

Under the old law you had only the right to admit one. Now under the law you have the right to admit all, if you so determine. The Chair holds that the motion of Mr. Rogers is in order.

The motion was carried.

Mr. Dye.—I think it is time that the Board took some action as to the length of the reports to be made, so that so much time will not be consumed in reading them to the meeting. I think there should be only a summary made, as we could thus save time for more important matters, and the reports could be published and would be accessible to us through the printed reports.

The Chair.—I think myself it would be much the better thing to do, as we could certainly save a great deal of time that might be used very advantageously in discussing points brought to the notice of the Board.

[Mr. Dye reads paper.] (See Reports.)

The Secretary.—Somerset county—Mr. Potter. (See Reports.)

The Secretary.—Monmouth county. [Mr. Denise reads paper.] (See Reports.)

Mr. Roberts.—I would like to ask the gentleman about that yield of wheat he mentions in his report—the wheat which was sown in April—whether he knows what was the effect of the nitrate of soda on the grass.

Mr. J. H. Denise.—The standing grass is very good. The field has been reseeded now. I cannot say whether it is any better or not. The standing grass at present is very good. I would just say here that I have been very successful in reseeded that way. I have been doing it for three years and a half, and the results have been very good indeed. I sowed the seed and then went over the ground with a small potato harrow, I think the middle of August, or somewhere close to that time.

A Member.—Does the gentleman mean reseeded with grass seed?

Mr. Denise.—Yes, sir; clover as well as timothy.

The Secretary.—We still have five or six counties to hear from; shall we finish them up this evening, or shall we adjourn and finish in the morning?

The Chair.—I will take the pleasure of the Board upon it.

Mr. Stiles.—Before we adjourn I would like to say one word, Mr. President, in regard to the oleomargarine question. I am glad to say that one of the Senators is here with us—a Senator who has prepared a bill which is about to be introduced, and he would like to read it to the Board, if they wish to hear it.

The Secretary.—Would not the gentleman prefer to bring it up to-morrow morning?

Senator McBride, Sussex.—I understand that some action has been taken to-day with reference to this oleomargarine question. I presume there is not a farmer here within the sound of my voice but that has some idea of the deception that is being practiced, not only in the manufacture of oleomargarine, but also in the manufacture of butterine, suine and other articles resembling butter—articles not only injurious to the producer of genuine butter, but to the consumer of the spurious article.

The sale of this oleomargarine compound has hitherto been and still does threaten the destruction of the dairy interests not only of this State, but the entire country, and it is, to my mind, high time that the farmers, as well as other business interests, combined to protect themselves and their customers against the sale of this spurious compound. It is high time our farmers began to open their eyes and to take some effective measures to subdue, so far as we can, the traffic in this oleomargarine and other articles of this kind.

In my own county of Sussex we are largely interested in the dairy products, and I have given this subject a great deal of thought and

study, and have endeavored to draft a bill that shall do away with the traffic in this spurious article, except under certain binding restrictions, certain stringent rules that no one need buy a spurious article of butter unless he does so knowing what he is doing.

I have been in consultation with the man who has been prominent in the legislation on this subject in the State of New York, a man who has been counsel of the New York State Board of Health, and with some of the heavy butter dealers of New York city and Jersey City, and acting in concert we have prepared this bill which I expect to introduce into the Senate to-morrow, and I would ask that this Board—that this assemblage of farmers—call upon their Senators and Assemblymen to aid us in passing this bill, if they have not already done so, and urge them to do all in their power to protect not only the interests of the farmers as producers, but the interests of the consumers as well, for there is no doubt in my mind that this consumption of spurious butter, which is growing so alarmingly, can but result, not only in the total destruction of our dairy interests in this State, but also in the destruction of the health of those who consume the different spurious articles of imitation butter—oleomargarine, butterine, suine, &c.

The Chair.—The subject has not been up to-day any further than this. In the report of the Camden County Board of Agriculture they have presented a number of resolutions, and one of them relates to this question of the manufacture of oleomargarine, and other imitations of butter.

They ask that this Board take some action on the matter at once towards securing appropriate legislation. No further action has as yet been taken by this Board on this subject.

That subject comes up before this Board to-morrow morning at 10 o'clock. Samples of the oleomargarine will be here on exhibition then, along with samples of genuine butter. It will then be proper for this Board to take such action as may be thought best.

There is one thing in this connection which may be explained; our exports of oleomargarine have been much larger than our exports of butter. These exports have amounted to nearly *eight millions of dollars* during the past year.

I mention this merely as a matter of fact for your consideration. I quite agree with the Senator and with the Board of Agriculture from Camden county, that some measure should be adopted promptly,

to prevent the sale of this oleomargarine, butterine, suine and similar imitations of butter to the consumer, for other than what it actually is—an imitation article.

If our people want to buy this stuff they should know what they are buying.

I have brought some oleomargarine with me and will bring it to the meeting to-morrow and will have it here on exhibition, where all may examine it. We will also have a sample of butter and will then see whether we can detect which is the fraud and which the genuine article. I could not detect a difference between it and the best dairy butter, at least not in looks.

Mr. Burrough.—I am very glad the Senator is here, especially so inasmuch as he has the bill which he proposes to introduce in the Senate to-morrow. I think it would aid matters greatly if he would come forward and read the bill.

Senator McBride.—The point, as I understand it, is this—this matter is to be discussed to-morrow morning at 10 o'clock. There are some special matters to be discussed in the Senate to-morrow also at 10 o'clock, and while I should like to be present with you here, I should also be at my place to-morrow in the Senate when these matters come up for discussion. If you could make some arrangements I would be glad to meet you and read the bill over to you, and receive such suggestions as you may think pertinent.

The Chair.—Our meeting is at 10 o'clock. There is nothing to prevent us from assembling here at 9 o'clock to-morrow morning to listen to the reading of this bill which the Senator proposes to place before the Senate.

On motion it was ordered that the Board meet at 9 o'clock to-morrow, Wednesday morning, February 3d, to discuss the oleomargarine question and hear Senator McBride's bill.

Then adjourned to meet in the Assembly Chamber at 8 o'clock.

EVENING SESSION.

Convened in the Assembly Chamber at 8 o'clock, Hon. Thomas H. Dudley, President, in the chair.

The President.—Under the statute organizing the Board of Agriculture the Board is required to meet in the State House at least once

a year, and in order to conform to that act of the Legislature, I call the Board of Agriculture here to-night to order. This is the Board of Agriculture adjourned, although we have invited many of our friends, and especially those of the Legislature, to hear the address which is to take place and which is a part of our proceedings.

At the commencement of the recent war—I mean the war of the Rebellion—there was a gentleman living in the southern part of the State of Pennsylvania, not the interior of the State, who threw all of his power and all of his ability into the Union cause, and whose name became familiar all over the country. And so, when General Lee with his Rebel army invaded Pennsylvania, the first thing he did when he gained a foothold in the State, was to send a detachment of his troops to burn and destroy the printing presses, the barns and buildings—all the buildings on that farm—which was done. This was a stroke which was hailed all over the South with great rejoicings and with jollifications, because General Lee had accomplished this thing, and burned the buildings with the aid of his army.

Since then the gentleman has become a resident of Philadelphia, and now edits one of the leading newspapers there—the *Philadelphia Times*.

We have that gentleman here this evening and he will address you. I refer to Col. Alexander K. McClure. I take great pleasure in introducing to the meeting Col. A. K. McClure.

ADDRESS OF COL. A. K. M'CLURE, ASSEMBLY CHAMBER, TRENTON,
NEW JERSEY, FEBRUARY 2D, 1886, BEFORE THE STATE BOARD
OF AGRICULTURE.

MR. CHAIRMAN AND GENTLEMEN OF THE STATE BOARD OF AGRICULTURE—I need hardly say that one who leads a very busy life would not take the time to inflict a prepared speech upon you, and so I wish simply to give some practical suggestions upon a subject that is of vital interest not only to your community but to every community of the country.

I notice that the State Board of Agriculture of New Jersey adhered to a time-honored custom in selecting a speaker, by making selection of gentlemen who know as little as possible about agriculture. This is one of the common customs of all agricultural societies. It is, perhaps, one that would be more honored in the breach than in the

observance. My own knowledge of farming, except that which I learned when a very small boy, was partly told you by the gentleman who introduced me in such flattering terms. I was for several years a farmer in the southern part of Pennsylvania. The first year I started into farming some several hundred acres of ground, General Patterson's army came and settled upon it—its location being very convenient to water, depots, etc.—and cleaned it out. Then, in 1862, General Stewart came around to my place and conscripted my ten farm horses into his army and took everything that was of value about the place. His friendly visit was followed by that of the Pennsylvania militia, who were not much better in some respects. This was my experience the second year I farmed. The third year, General Lee came along himself with some 60,000 men and again cleaned me out. In 1864, I still obeyed the scriptural injunction to sow that I might reap. I kept on sowing and hoping to reap. In 1864 I got my crops harvested and into my barns, and congratulated myself that I was at last a farmer, having sown and having gathered a crop. Then General McCausland came along and burned my barns, with crops and all together—everything I had harvested.

My farming after that time was done by a gentleman commonly known in our counties as the county sheriff, and I stepped out. Now, gentlemen, this is about all that I know, practically, about farming.

I call to mind a gentleman who was at one time very popular as far south as Texas, also a newspaper man, who wrote a book about farming. But I do not think anybody learned anything about farming from this book. I do not think this gentleman's knowledge of farming was much better than mine. I never heard of but one successful experiment in farming that this man made. I refer to Horace Greeley. The only case of profit ever made by him, that I have heard of, was when he bought pigs at \$1.50 a piece in the spring and sold them in the fall of the year at \$9 apiece. Of course, in this case, he made a profit of \$7.50 on each pig. He said it was true that he fed them \$10 worth of corn each during that time, but that did not make any difference because he did not expect to make any profit on the corn anyhow.

I do not intend to address you to-night on any of the dry points of agriculture, but will simply throw out a few practical remarks and suggestions.

There are few intelligent observers of the industries of the country

who may not see something profitable to the very important industry represented by our agricultural community. And one of the commonest defects—the one thing that has more than all others retarded the progress and the elevation of our agricultural industries—has been this fact, that there has been no class of people in any single industry that has so little studied it and has applied so little intelligence to the acquirement of an understanding of the fundamental principles upon which it must be conducted. We farm very much as our fathers farmed before us. They succeeded; they could make their living. You say their sons could make their living, and their sons' sons have followed after them very largely. This is all wrong, both in theory and in practice. I think that no man can farm successfully in these times, and that no man can do his work thoroughly who does not understand the principles underlying the science which should be applied to farming.

Pardon me, gentlemen, if I state the case in a manner that may appear harsh to you, but I say this to the representative men of the State Agricultural Society of New Jersey, because I think it one of the important things that should be taught; that there is not a single industry in the entire length and breadth of our land whose common-sense principles are so little studied as are those of farming.

That might be regarded by many as an offensive sentiment. It is not used in any such sense. I say it because I think it most important that men should understand it. Everything around our farms has progressed, as a rule, far in advance of the farmer himself. I can remember when a boy, when the sickle was in use; I can remember when the sickle gave place to the cradle, and the cradle gave place to the reaper, and to the reaper was added the binder. I can also remember when the flail gave place to the threshing machine; when the broadcast sower gave place to the drill. There is not a single branch of industry connected with farming that has not advanced with our enlightened age. And while the farmer has seen this progress all around him, seen the results of ingenuity that have enabled him to turn his labor to greater profit, the farmer himself has not progressed, he has not advanced in the intelligent understanding of his important calling. The mechanic must advance. He must understand why he performs his labors; he must understand how he produces results. The farmer as a rule knows that he sows his seed, that he fertilizes his soil, that he gathers his harvests. Tell me how many men

there are in your respective communities who understand that which is within the easy range of intelligent comprehension : who understand the nature of the soil they farm, the qualities they extract from their soil by the growth of their various crops, who understand the qualities of the various fertilizers used, and who understand the kind of fertilizers required to restore the soil in the points in which it is exhausted ?

I do not refer to book or theoretical farming. I mean the plain, common-sense principles which should govern the method of every farmer. Every farmer should understand his soil as the mechanic must understand his machine ; knowing what it is capable of doing and knowing why it does it. Every mechanic must understand his machine, and if he does not we do not consider him a competent man ; we do not employ him longer ; we dispense with his services ; we discharge him. Throughout our agricultural districts it is often simply hap-hazard, and the result is there is a vast amount of labor expended—labor that is not profitable to the farmer and which is simply a hindrance to his prosperity, caused by the want of a common understanding of that which he owns and of that upon which he depends for his livelihood. How many farmers in your immediate neighborhood would look upon me with amazement were I to make the simple statement about plowing the soil deeper—that to plow it deeper would make it dry in wet weather and wet in dry weather ? This is regarded as a contradiction.

I know some men who understand this rule. It is a very plain rule to those who will observe the results of deep plowing. Yet a large proportion of farmers would tell you it was simply an impossibility, and would not be inclined to believe it, but who still might give some credit to it if it was proven to them by actual observation. Some of our farmers have proven this fact, that deep plowing makes the ground wet in dry weather and dry in wet weather. Some of our farmers prove by their daily practice that they do not believe it ; they do not understand and they will not profit by it. Still men of any other industry would be compelled to accept such important knowledge when offered and proven, or they could not advance.

The farmer need not study books ; he need not study science ; he needs simply to understand the things which are about him ; to understand the properties of the soil, which are easily understood ; to understand the beneficent influences which our God has supplied to

us ; he needs only to understand how to utilize them, how to economize them.

How many farmers sit down and calculate that the air they breathe is the greatest fertilizer of all—that which God has given them. They will dig and throw up the yellow, unproductive clay. They will see it lie barren and unproductive, nothing growing upon it. By and by they will see some growth starting upon it, this growth being followed by a more luxuriant growth year after year. They do not see that this is caused by the fertilizer which God has given the farmer free of cost ; given to the farmer who will simply open his soil to it ; simply studying those things which are within his reach, and simply applying them by the most common methods ; simply taking his plow and sinking it deep into the earth, turning up the earth which will enrich itself. And when the water comes too plentifully to his fields it will sink into the earth as deep as his plowshare has gone, draining the roots of his crops. And when the drouth comes, the air that possesses the moisture that the earth is denied, will sink down as deep as the earth has been disturbed by his plowshare, and whenever it gets to a depth where the ground is cooler than the air, then it will deposit its moisture. There is nothing in this that the commonest understanding should not master in his boyhood. There is nothing in the application that is difficult. There is nothing pertaining to it that is beyond the ingenuity and the resources of the farmer. All he should do is simply to open his soil to protect it from drouth, to protect it from flood. Let him do this from year to year. Now, is this theory, or is it common sense ? There is not one of you who, if he will look around his own farm, can fail to illustrate every one of those propositions. And yet turn around among your own neighbors who live by farming, and how many of them apply these common principles to their daily business ? I remember one time seeing a farmer, of at least ordinary intelligence, throw lime upon his straw pile. I stopped him and said, "What is your purpose in doing that ; what is your idea ?" He said, "I desire to make manure." I said, "You whitewash your corn-crib, your stables, your fences and your other buildings ; why do you whitewash your fences and your buildings and your corn-cribs ?" He said, "To preserve them." "And you put lime upon that straw to make manure out of it ?" I said ; "Did you ever have any plaster standing about in your barns ?" He answered, "Yes." I said, "What was the result ?" He said, "The bottom of the bag dropped

out." I said, "Did you ever consider that if you took plaster and put it upon the barnyard it would have the same effect as it has upon the bag in your barn?" That was an entirely original idea to the gentleman. The plaster would not only decay the straw, but would make the best possible manure in time, but at the same time it would prevent the escape of the most valuable properties which it should retain for plant food.

I know that in our own State of Pennsylvania two-thirds of all the barn-yards are located where the best part of the manure—where two-thirds of the valuable matter is washed away. If a man would prevent the waste of his manure, and throw a little plaster upon it, he would protect every property of value in that manure that the soil most needs. In fact, it is so simple a principle that it is rejected by our farmers because it is so simple. I simply give this illustration to show how very much our agricultural community is behind in appreciating those things which are so applicable to their calling, and the cheapest possible ways which bring the best results.

It is upon these points that agriculturists need information most. It is upon these points that our farmers need to be educated. The farmer should be educated as much as possible; not in the education of books only and in general knowledge, but in the education which pertains to agriculture. It should be of that plain, practical sort, that will make a man earn his living better and easier every day, and bring as large a profit from the same measure of labor. And it is on these points that agricultural societies have their chief duties to perform. Bear in mind, gentlemen, this is one of the most important features of your society. The field is open to you to do a great work.

I know there is a prejudice among farmers against making any changes from their present plan of doing their work. I know there is a prejudice, and not without reason, against what they call book farming, or theoretical farming, or scientific farming. They are not to blame for that. Scientific farmers, as a rule, have never succeeded, and the men who are most refined in their theories about farming are like men of refined theories in everything else, in politics and in law—failures. But the elements of success in any other enterprise are an intelligent, common-sense knowledge of those things which pertain to what belongs to the man's own industry, to the knowledge of his own soil, to the knowledge of his own crops. He must have a knowledge of the crops he grows. He should know what these

crops would extract from the soil. He should know what fertilizers are necessary to put back into his soil the ingredients which have been withdrawn by the previous crops. He should have a common-sense knowledge of the qualities of soil and fertilizers. He should have a common-sense knowledge of the air itself, and everything around him. He should have a knowledge of everything which God has given to advance the prosperity of his calling. These are not wild theories. This is not book farming. This is not attempting to apply science to a plain and indispensable industry. It is simply applying that which is necessary to the success of the farmer; and without this plain, common-sense understanding of his soil, his crops, his manures or fertilizers, the air he breathes, and all the things around him necessary to the success of his crops, he cannot prosper. Now there is one lesson we must learn, and it is a very impressive one. Good farming pays best. I shall not attempt to prove it by any figures; I shall not attempt to prove it by any carefully-prepared theory, but I shall prove it by fact itself, by a fact visible to all, that wherever land has become most valuable in your State, or in my State, or in any State, in any portion of the Union, there farming is most profitable. Go into the garden parts of Pennsylvania, Lancaster county, where farms command a very large price, selling for \$200 an acre or more, purely for farming purposes. There farms are never larger than from sixty to eighty acres, and there is no agricultural community upon this continent that is so thrifty, and so largely multiplies its profits from year to year, where the land is as high as town lots in many of your villages and towns in other States. Now why is this? It is simply because necessity becomes the teacher of the farmer. Simply because he is compelled, in order to make a living upon his farm, to study, in a plain and common-sense way, every possible improvement in the pursuit of his calling. The result is that in all this county of Lancaster there is hardly such a thing as a sheriff's sale of land. Where a man pays \$200 for his farm, and the farm not over sixty to eighty acres in extent, there is no community where the people are so uniformly rich and prosperous.

Study your land carefully and it will not only become more valuable with the improved methods you will use from this very knowledge, but your wealth and your crops will also increase in proportion.

Just as men shall begin to limit the number of acres which they

farm, just so much will they be compelled to study farming, to study the nature of their crops, of their fertilizers, of what fertilizers to use, and when and how to use them. Just as they learn to use the proper fertilizer to replace that in their land which the previous crop has taken away, so will they also understand the wants of their farm, and become successful farmers.

This is not book farming or farming by theory, but it is the plain, common-sense rule, that should apply to every farmer's methods. As they do this, they will advance in knowledge and in prosperity, and so will their farms advance in value.

Slipshod farming cannot pay. The greatest misfortune is that men can live by slipshod farming. In no other calling in life is it possible to do this. The bad blacksmith cannot succeed, because no one will employ him; the bad bricklayer cannot succeed, because his work not being satisfactory no one wants him; the bad machinist can get no employment; but a slipshod farmer can live, and he goes on in the same old rut from year to year.

In all the mechanical pursuits men must thoroughly understand their business or they cannot succeed; but the farmer who can manage to exist, goes on from day to day and from year to year, without regard to the improvements going on all around him.

I am, of course, glad to say that there are many exceptions to this rule, but you must acknowledge that there is only too much truth in the assertions I have made.

The poor farmer goes on from year to year, while the poor bricklayer, the poor blacksmith, the poor machinist, the poor carpenter, cannot hope to succeed, because of the competition and progress going on constantly in these industries.

Now, if I were proposing any new rules about farming, I could understand why farmers should hesitate before accepting them. But there is nothing new in this, not a word. I have not stated a single proposition that any gentleman will here question. This is no fine-spun theory, but simply plain, practical common sense all the way through. It is necessary in any industrial undertaking to understand it thoroughly, in order that it may be prosecuted to success.

Is there any reason why this cannot be taught our farmers? Is there any reason why men, even of the dullest comprehension, cannot understand it? Having simply a little plain, common sense, a man can produce better results than he who goes along from year to year

in the same old ruts. Men who are educated to a knowledge of the requirements of their farms, can grow better crops on less land, keep the land in better order, with less money, and do better in every way.

Let him go on his own farm and see where the water stands and rots the roots of his crops. Let him go where the drouth destroys the vitality of his crops, and there is barrenness.

On the other hand, let him go where the ground has been dug down deep by his plowshare, and there is abundance. It is not at all difficult to illustrate this proposition. Therefore, it is most important that agricultural societies and agricultural organizations, and especially the gentlemen representing the different boards of the different counties of your State, should attempt to teach in some organized way these plain, practical, common-sense principles to those around you who require such instruction.

Even the most listless farmer, when he finds he can get more out of his land, will be certain to compare the old plan with the better and newer one, and we need not fear the results of such comparison. Teaching, to be practical, should be constant. When once a man is brought to see the correctness of his views, he should be the nucleus around which others will be gathered. He should be the fountain through which it should go to every part of your State, teaching men that which they most need and learning them to become practical farmers; teaching men the secrets of their farms—secrets open to all who will experiment and become practical.

As this is an occasion when a man may speak, perhaps, on almost any topic pertaining to agriculture, let me make a few suggestions that I have always taken an opportunity of making when at all proper.

I know that what I am about to say is the case in my own State, and I think it is so in yours—amongst a very large class of intelligent people. I am sure this is the case to perhaps the same extent in New Jersey that it is in other States.

One of the greatest errors of farmers looking to the education and direction of their children, is their failure to make their homes attractive. The very first response of the farmer to a declaration of this kind is the contemptuous remark, "a gentleman farmer." Nothing of the sort. Not in the sense in which he would understand it or use it. But the man that is not a gentleman, whether he be farmer, mechanic, laborer, or what he may, is forgetful of his highest prerog-

ative. It requires him to be honest, courteous and just, and that is the soul of gentility.

I was strongly impressed with this idea of making home beautiful nearly twenty years ago, when I happened to be a sojourner in the far Rocky Mountains, before the surges of civilization had broken in upon Mormonism. For a community whose foundation was based on ambition, lust and greed, it was in many respects one of the most successful industrial communities upon the face of the earth. Around it, upon every side, were the Rocky Mountains, with their eternal caps of snow. Civilization had not then approached them. They were many hundreds of miles away from their eastern neighbors. The song of the iron horse had never been heard there. It was at that time but a little beyond the Father of Waters, and yet everything they needed was made by themselves. Not one cent tribute did they pay to any State or community, and they were happy in the abundance of their own creation. The only thing they asked of civilization being to be let alone—the only thing they asked was that they be shunned by all, and be let alone in the enjoyment of that which they had created and therefore possessed.

In that far-off valley, a thousand miles from the whispers of civilization, there was not a home, however humble, that was not a place of beauty—not one.

It was the command of the arch impostor who ruled that church with a rod of iron, that it should be so, and he was wise. He had brought his followers from the dark pits of the old world, strangers even in a strange land. He had planted them in this valley, and had given them a home, and the command sent forth was that this home must be made a place of beauty, and as far as the eye could see over Utah, every home, however humble, no matter by whom occupied, even the humble adobe cot, was overgrown with flowers and vine, rich in blossom and in the fruits which the family were to enjoy.

It was by the command of one who knew how to make men attached to their homes. He was wise in this.

It was a lesson that our Christian civilization could well profit by—a lesson which should be taught in every community and impressed upon every one, however humble.

Let me ask you how many of your homes are desolate, bereft of every beauty that nature's God has placed within your reach. Around them is often scarcely a trace of the beautiful—bare and barren—

scarcely a shrub or a flower even, and perhaps not a single tree for shade. There is nothing about it to make the child love it as the brightest and most beautiful place on earth, and it is an unpardonable offense that it is so. It is not only a neglect but it is a crime—yes, a crime against your wives and your children; a crime against your household.

The man who raises his children to prove at what little cost it can be done, to show how cheaply a boy can be brought up and thrown upon the world, and who raises his daughter to ignore all the refinement which nature can give, that man commits a crime against his own household gods. Is this not true in your respective communities?

Here and there you will find one of the humblest men you know surrounding his home with all the comforts and beauties he can gather together; a man who lives upon his daily wages, and his wife, with intuitive refinement, is constantly engaged with himself during their leisure in making their home a thing of beauty. It costs no money to do this; no sacrifice of wealth to do this. Without money and with little labor he could make his home a paradise, surrounded with trees and shrubs and flowers.

You will find homes of this kind among the poor and around them you will find men of wealth, of culture, of refinement, who never seem to have given it a thought that the home where their children are born, and where they are expected to live and grow up, should ever be a place of beauty, a place for the children to love, a place that they can look back to with grateful memories after they leave the old home. They do not seem to think it necessary that the home should be a place where their children can sit down in the enjoyment of all the beauties which Heaven intended them to enjoy. These things are forgotten by many people; very largely by the people in our agricultural communities. When this is pressed upon the farmer, his answer is that it requires time and money, that men must have wealth, that they have no time and that they have no money. Why, it requires none. Any man, in less than an hour's rest from a day's toil, could make his home a place of beauty. No man need spend one dollar of money, if he has none to spare, to make his home a place that his children will learn to love as the dearest place upon earth, and in whose minds memories of it will linger throughout all the vicissitudes of life.

It requires that the man, during an evening or noonday's rest, shall

plant a flower, a tree, a shrub. This is all. This will soon make his home attractive. A man should make his home attractive and let his neighbors see that there is beauty around him. He should quicken his sons to the love of beauty and his daughters to refinement. This is home. Children who are thus trained, whether rich or poor, who are taught that home is the most lovely of all places, the most fragrant and delightful, however humble, will carry with them through life the influence of home, and let them go forth whence they will or as they may, no matter how tempest-tossed through life, such children will never lose the beneficent influence of home.

Remember that ours is a government of homes. As the home is to the community, as the community is to the county, as the county is to the State, and as the State to the Union, they are "distinct as the billows, but all one sea."

When you have exhausted theory as to free government, of which we boast so much, all go back at last to the homes of our own land.

I have been away out in the fastnesses of the Rocky Mountains, amongst those who are the pioneers of civilization, peopling the new States which are to shine in the galaxy of the Union, the men who had cast all civilization behind them, and gone in quest, they knew not of what—forgetting every tie and leaving all behind—and there was not one of them whose bronzed face did not light up when speaking of home.

Let no man dream that his children will be forgetful of a beautiful home. If they shall be forgetful it must be because home has been cheerless and desolate; and because parents have been guilty of a crime in permitting it to be so.

I wish to refer to a subject that was mentioned by your President—one that I would seek to impress upon your minds by a few concluding remarks.

There is no community in this broad land so interested in honest government as the farming community. They are the substrata of the whole political foundation of this continent. When they are prosperous the whole nation is prosperous. When they are depressed there must of necessity be depression in every channel of industry and trade. When bad government or misrule press upon us, it falls most heavily upon them, and there is no class of the entire sixty millions of people, in all their diversified pursuits, so honest as to their government and their general habits of life.

And yet how many farmers are there who take this responsibility upon themselves and exercise their right and their prerogative? How many of them who are willing to rise up and smite their own party when it commits a wrong? How many of them dare to do it with a manhood that should be known throughout the land, to the men of every walk in life, of every industry, and even to the government itself? I fear there are few. They should rise like the sovereigns that they are, for they are the sovereigns, the absolute sovereigns, of the land. They are the men who suffer most, and the men who have the most power to correct the abuses of bad government, but they are men of party and often bow to party interests, in preference to honest administration. Is this not the truth? Your cities are corrupt; Jefferson said a hundred years ago that great cities are great sores, and so they are. And yet they are indispensable to you, and to every interest and class of our people, because they are created by the industries of the land, but I have not known of a wrong in New York, where there is Democratic rule, nor in Philadelphia, where there is Republican rule, that the Democratic or the Republican farmers would resent at the polls. Is not this the truth?

I appeal to you to enter your protests, as representing the agricultural interests of New Jersey. We want honest government, government in its integrity. I appeal to you gentlemen, are these not the words of truth? [Applause].

I wish, indeed, that I could stand before you to-night and tell you that one party was better than another. I would tell you so if I could, but I dare not. [Laughter.] My mouth is estopped by the truth—the truth that you know and all of us know, and which not one man in a thousand dare assert with the manhood of a sovereign, until the very foundations of our government are sapped by misrule; then comes the revolution, sweeping guilty and innocent alike away, when you sit down and let it come again.

Intelligence and integrity are essential to the agricultural interests of this community.

Farmers fail to enforce proper government, and their party knows they can be counted on to assist in the perpetuation of misrule. Party leaders know that the farmers, like others, can be counted on to maintain party supremacy regardless of public interest.

The time has passed when party can stand above integrity. I know your politicians will tell you it is not so; they will tell you that their

party is clean-handed, and the other party is not, but intelligence has grown too rapidly, and the time is near at hand when farmers will feel that they stand high over all of the raging factions of plunder, and they will dare to be honest in enforcing honest government, which they have every interest in maintaining in its integrity. [Applause.] I care not whence political rottenness comes—smite it to the dust. Whenever it shall be known that outside of our cities there is an honest yeomanry that will do this, politicians will be honest; not because they prefer it, but because they must make a virtue of necessity. [Applause.]

The demoralization of war in this, as in every other country, demoralized our politics, and we have been demoralized in power and in government, and have suffered more from it than we have suffered for fifty years before. I do not say that we are worse people than we have been. Do not misunderstand me. The world in all its history was not as great, as good, as Christian as it is to-day. We have lived in the generation that is greatest in all the history of man. We have seen the grandest achievements in both the field and forum, in all that is good as well as in all that is bad.

I have no patience with the man who talks of the demoralization of the times in which we live. We are the greatest, the noblest and the grandest of all the people of the earth. Let us improve, then. Let us make our yeomanry great in their integrity. Let it progress, as the world progresses. Let it stand out against the political corruption in our cities, and while fraud may pursue its deadly course, it may at times be overthrown; but while an honest, intelligent, upright and faithful yeomanry shall keep its eyes steadily upon free government, it will be safe. Let us do this, and generation after generation our children and our children's children will bless us for the most beneficent government ever reared by human hand or blessed by heaven. [Applause.]

The Chair.—As the address of Col. McClure was the chief business upon the programme for this evening—

Mr. Quinn.—Mr. President.

The Chair.—I recognize Mr. Quinn as a member of the Board. Mr. Quinn.

Mr. Quinn.—As a representative of the State Board of Agriculture, I rise to offer a vote of thanks to Col. McClure, and feel sure that if the farmers of New Jersey will prepare the soil in the way recom-

children will be no worse off than we are.

I therefore offer a resolution of thanks for his very able, interesting, instructive, as well as entertaining address before this State Board of Agriculture to-night.

Unanimously adopted.

The Chair.—I beg leave to call your attention to the fact that Senator McBride will be with us in Masonic Hall to-morrow at 9:00 A. M., to read a draft of the bill he is about to offer for the suppression of the sale of oleomargarine, butterine, &c. We would like you all present.

At this hour, 9:20 P. M., the meeting adjourned until to-morrow, Wednesday morning, at 9:00 o'clock.

MORNING SESSION, FEBRUARY 3d, 1886.

Meeting called to order by the President, Hon. Thos. H. Dudley, at 9:15 A. M., in Masonic Hall, Trenton, New Jersey.

The Chair.—The Board will remember that we adjourned until this early hour for the purpose of hearing Senator McBride read the bill which he is about to present to the Senate—the bill in regard to the manufacture and sale of oleomargarine, butterine, suine, and other imitation articles of butter.

Senator McBride.—I will say, before I begin to read this bill to you, that I presume there is not an honest producer of butter or other dairy products in this room, or that there is not an honest consumer of dairy products in the State of New Jersey, but that will aid us in the introduction and passage of a bill that will enable us, so far as possible, to protect the dairy interests in this State; not only the interests of the producer but the interests of the consumer as well; not only the pockets of the producer, but the health of the consumer.

We all know that the manufacture and traffic in these imitations of dairy products has hurt our interests to an alarming extent, and that it bids fair to ruin the dairy interests of the country. [The Senator then read extracts from his bill, which has since been introduced as Senate Bill No. 85.]

A lengthy discussion followed upon various points in the bill.

Mr. Burrough.—I would like to say to Senator McBride before he leaves, that we have here on the table among our exhibits some samples of genuine butter, and also some samples of oleomargarine, and we would be glad to have him examine and compare them.

If he will communicate the fact to the other Senators we should be pleased to have them come in and examine it for themselves. I move that we extend to Mr. McBride a vote of thanks for his kindness in coming here and favoring us with the reading of his bill.

Carried.

Mr. Garrison.—I make a motion that this body recommend the passage of this bill—of the bill read to us by Senator McBride this morning. (This motion was subsequently withdrawn.)

The Chair.—I think you will all agree with me that this is a very important bill, and only a portion of it has been read to us. Do you think we are ready to vote for it when we have not heard all of it? If we pass the motion made by Mr. Garrison we will commit ourselves to the whole bill. Now, do we wish to do this without being sure as to its entire contents?

Mr. Williams.—This is a very important fact. There is a good deal of law in this bill and we have heard only a part of it. It may be well to recommend the passage of that or a similar one.

The bill offered by Senator McBride requires a great deal of work and machinery to operate it.

Mr. Lewis.—If the Legislature will protect the producer and the consumer in this matter, I shall be very glad to vote for the passage of it, but I have never known Legislatures to do that yet.

Mr. Burrough.—I am instructed by the Camden County Board of Agriculture to present to this body the following resolutions. (See Camden county Report.)

Mr. Roberts.—I like the idea of those Camden county resolutions very much for the most part, but I do not like the idea of their recommending that a certain line of action be adopted.

My judgment would be that it would be a great deal better to appoint a discreet committee to watch the legislation and advocate such bills as should be passed, to pay attention to any bills that may be offered, and attempt to shape and mould it to perfection, as nearly as possible. It is impossible for us to formulate this matter to-day and get it in good shape.

Let our legislators take it, and when it is presented, read it care-

fully and study it item by item, and it will thus be brought out in a great deal better shape. They can do this much better than we can, and I think it better for us to appoint a committee.

Mr. Burrough.—I want to say in this connection that there has been an influx of bills on this subject. There are men here now—men who have been here ever since the Legislature convened, and who are staying here day by day—on purpose to protect the oleomargarine interests in this State, and one of their ideas is to get as many bills offered to the Legislature as possible, to watch their progress—the progress of any one bill—and to try to offer amendments to such bills, and when a bill is finally passed, they will have one that will not hold water, so to speak.

Do not let us do anything but express in most emphatic language our contempt for the article itself.

Judge Holcomb.—There is one very important thing which should not be forgotten in this connection, and that is if any one is appointed to look after our farming and dairy interests, we want a farmer at the head of it. We want a farmer at the head as the commissioner.

The Chair.—I presume there is not a person here in this room but who is in favor of the passage of some law to protect the producer of genuine butter.

It is an indisputable fact that this spurious butter is being sold all over the State of New Jersey to-day. I notice that in Pennsylvania they have a very stringent law; they must place with the package a label or ticket telling just what the stuff is.

I have brought here from Philadelphia these samples of oleomargarine. I bought these and took them from the package myself, and there was no mark upon the package to show what it is. I saw the packages myself, and there was nothing on it to indicate what its contents were, or to indicate the contents to be oleomargarine.

There is no question in my mind that a law should be passed regulating the manufacture and sale of this article, and it should be very stringent.

The evil is a great and growing one. All producers are entitled to some protection, as are all consumers.

This is the law in Pennsylvania of which I have spoken before. I know of a gentleman in Philadelphia, a shopkeeper, who is selling this bogus butter, this oleomargarine, but he has no sign to indicate to the consumer that he is doing so. He has nothing to indicate that

he is selling anything but the genuine article. Yet he sold this to me for oleomargarine, and told me that it was oleomargarine.

The Secretary.—I think Mr. Roberts' amendment a very good one. I understand it is his idea to select a committee to watch the bill in all its features. We should all be largely interested in this plan.

Mr. Crane.—I suggest that the subject be deferred until the proper hour arrives.

J. W. Dickinson.—I move you, sir, that we suspend the reading of the reports by counties, and that delegates be directed to hand over their papers to the Secretary.

Carried.

The Chair.—We will therefore dispense with the reading of the reports from the rest of the counties, if there is no objection to such action, and they will be printed in their proper place.

The business of the morning is, first, a paper entitled "Dairy Interests," by John I. Carter, of Chester county, Pa.

The Secretary.—I have a letter from Mr. Carter, regretting that indisposition prevents his being with us.

The Chair.—The whole subject of the dairy interest then is before you without Mr. Carter. The Board will be pleased to hear any person on this subject.

I desire to call your attention to what we have here on the table before us.

Mr. Burrough has brought us some genuine butter ; I have brought three specimens of oleomargarine which I got in Philadelphia. The butter brought by Mr. Burrough is from one of the very best dairies in the country.

Mr. Burrough.—The Committee on Credentials would like to make a report if the Board is ready to hear it.

The Chair.—That is a privileged question and the Chair rules that they can be heard if they so desire.

Mr. Burrough.—We find the following associations, county boards, granges, etc., have reported by the following delegates :

DELEGATE.	SOCIETY.
Hon. THOS. H. DUDLEY.....	State Agricultural Society.
Hon. P. T. QUINN.....	State Agricultural Society.
WM. R. WARD.....	State Horticultural Society.
E. WILLIAMS.....	State Horticultural Society.
RICHMAN COLES.....	State Grange, Patrons of Husbandry.
THOMAS T. KINNEY.....	Geological Survey.

DELEGATE.	SOCIETY.
CHAS. E. ELMER.....	Geological Survey.
JOHN DE MOTT.....	Board of Visitors to Agricultural College.
WILLIAM PARRY.....	Board of Visitors to Agricultural College.
ISAAC L. SMALLEY.....	Board of Visitors to Agricultural College.
WM. S. TAYLOR.....	Experiment Station.
GEO. H. COOK.....	Experiment Station.
V. P. HOFMANN.....	Atlantic County Board of Agriculture.
H. I. BUDD.....	Burlington County Board of Agriculture.
JAS. LIPPINCOTT.....	Burlington County Board of Agriculture.
DAVID T. HAINES.....	Burlington County Pomona Grange.
EDMUND COOK.....	Burlington County Pomona Grange.
HON. EDWARD BURROUGH.....	Camden County Board of Agriculture.
EDW. S. HUSTEN.....	Camden County Board of Agriculture.
MORRIS BACON.....	Cumberland County Board of Agriculture.
W. O. GARRISON.....	Cumberland County Board of Agriculture.
ISAAC S. CRANE.....	Essex County Board of Agriculture.
AUSTEN E. HEDDEN.....	Essex County Board of Agriculture.
GEORGE H. GAUNTT.....	Gloucester County Board of Agriculture.
F. B. RIDGWAY.....	Gloucester County Board of Agriculture.
THOS. BORTON.....	Gloucester County Pomona Grange.
DAVID S. ADAMS.....	Gloucester County Pomona Grange.
JOHN T. COX.....	Hunterdon County Pomona Grange.
ISAAC H. HOFFMAN.....	Hunterdon County Pomona Grange.
F. S. HOLCOMB.....	Hunterdon County Agricultural Society.
BENJ. E. FINE.....	Hunterdon County Agricultural Society.
HENRY F. BODINE.....	Hunterdon County Board of Agriculture.
FRANKLIN DYE.....	Mercer County Board of Agriculture.
H. E. HALE.....	Mercer County Board of Agriculture.
THEO. CUBBERLEY.....	Mercer County Pomona Grange.
W. D. VANPELT.....	Mercer County Pomona Grange.
D. C. LEWIS.....	Middlesex County Board of Agriculture.
J. M. WHITE.....	Middlesex County Board of Agriculture.
D. D. DENISE.....	Monmouth County Board of Agriculture.
D. A. VANDERVEER.....	Monmouth County Board of Agriculture.
J. W. DICKINSON.....	Salem County Board of Agriculture.
ROBERT HEWITT.....	Salem County Board of Agriculture.
M. D. DICKINSON.....	Salem County Pomona Grange.
E. L. BORTON.....	Salem County Pomona Grange.
WM. S. POTTER.....	Somerset County Board of Agriculture.
N. W. PARCELL.....	Union County Board of Agriculture.
DENNIS C. CRANE.....	Union County Board of Agriculture.

EDWARD BURROUGH, }
 E. WILLIAMS, } Committee.
 ——— ROGERS, }

These gentlemen are entitled to their expenses in attending this State Board of Agriculture to be paid by the State.

On motion the report was received and adopted.

Mr. Roberts.—There is one matter I would like to speak about. There are a number of gentlemen here who feel a delicacy in talking upon any question brought up in the proceedings, feeling that as they are not delegates to the State Board they are not entitled to the privilege of the floor.

If I am correctly informed any farmer here has the right to speak on any business before the Board. I know there are quite a number of gentlemen here who are not delegates, and who would like to make remarks upon the questions brought before the State Board if they may be allowed, even though they are not delegates.

I only want to call your attention to the fact that all may feel at liberty to speak upon any question if they so choose.

The Chair.—As a matter of course the Board of Agriculture is a corporation incorporated by the State. As the Chair understands the State law it provides for the election of certain gentlemen as delegates to this Board. These persons have the right to have their expenses paid on coming here. The law also recognizes other members of the Board. Any person belonging to any agricultural society, or association, or grange, has a perfect right to come upon this platform and speak upon any question brought before the State Board of Agriculture. Any such gentlemen may be elected as officers of this Board.

I only hope that every one here present will feel himself at liberty to participate in the proceedings of the State Board. You should all feel at liberty to do this. It is by coming here where we are all to be instructed in that which is most necessary to our success as farmers. I would like to see every respectable farmer in the State come here and take part in the proceedings of this State Board. It is only by meeting together and comparing views that we are enabled to educate and instruct in agriculture.

The Board will now continue the oleomargarine question.

Mr. Roberts.—I move that a committee of five be appointed, including the Chairman, to whom the whole matter be referred.

The Committee appointed are :

Mr. Roberts, Burlington; Mr. Dudley, Camden; Mr. Crane, Essex; Mr. Burrough, Camden; Mr. Taylor, Burlington.

be referred to this committee for their action.

"The work of the Experiment Station," by Prof. Cook, was the next topic brought before the meeting.

(As this is given in full in the "Annual Report of the New Jersey Agricultural Experiment Station," it is deemed unnecessary to reprint it here, and the reader is referred to that document for an account of the work the Station has carried on during the year 1885.)

The Chair.—Is the Nominating Committee ready to report?

Mr. H. I. Budd.—We are sorry to report that we cannot agree, and we beg to be discharged.

On motion, the committee was discharged, and a new committee, consisting of one from each county represented in the State Board, was appointed, each county appointing its own committee member from its delegates, as follows:

Atlantic, Mr. Hoffman; Burlington, James Lippincott; Camden, Joseph Hollingshead; Cumberland, Morris Bacon; Essex, J. H. Baldwin; Gloucester, Geo. H. Gauntt; Hunterdon, John T. Cox; Mercer, Ralph Ege; Monmouth, D. D. Denise; Middlesex, J. M. White; Salem, J. W. Dickinson; Somerset, Mr. DeMott; Union, N. W. Parcell.

The Chair.—As Prof. Atwater will be here this afternoon to address you on the subject of "Fertilizers," and as his address will be a very able and interesting one to us all, I think it would be well to adjourn to an earlier hour.

On motion, to adjourn until 2 P. M.

AFTERNOON SESSION.

TRENTON, N. J., February 4th, 1886.

Meeting called to order at 2:15 P. M., by the President, Hon. Thomas H. Dudley.

The Chair.—The first business will be the report of the Committee on the Nomination of Officers.

Mr. Baldwin, Essex.—Your committee beg leave to report as follows:

EDWARD BURROUGH.....Camden.

VICE PRESIDENT.

WM. R. WARD.....Essex.

SECRETARY.

WM. S. TAYLORBurlington.

TREASURER.

FRANKLIN DYE.....Mercer.

EXECUTIVE COMMITTEE.

GEORGE H. COOKMiddlesex.

D. D. DENISE.....Monmouth.

MORRIS BACON.....Cumberland.

Mr. Williams.—I believe the law does not provide any particular method of election. I, therefore, move you, sir, that these officers be elected unanimously.

Motion carried.

All the foregoing officers unanimously elected.

The Chair.—Mr. Parry and Mr. Baldwin will please escort the gentleman to the chair.

Mr. Burrough is escorted to the chair by the committee.

Mr. Parry.—We have the pleasure of introducing to you the Hon. Edward Burrough, of Camden county, who has been unanimously elected as President of this organization.

Mr. Burrough.—Gentlemen of the State Board of Agriculture, there is not a member present who could have been more surprised than he who is now addressing you, at the nomination of the committee. Had I as much confidence in myself as the committee appears to have had in me, I would have no hesitation in accepting the nomination.

I am not insensible of the honor extended me by the committee. I have been a farmer from my boyhood, and always expect to be interested in agricultural pursuits. I have thought it right to lend a helping hand to my fellow-agriculturists, no matter to what calling I might be chosen. I must take a little exception to what the honorable gentleman to whom you listened last evening said to you in his address. If he says the farmers of New Jersey are not as intelligent as other classes in the knowledge of their industry, I beg to differ with him. I recognize in the farming community of New Jersey an advanced intelligence. We have the granaries of the West in competi-

South, and the States south of Mason and Dixon's line in our small fruit products to contend with. Our dairy products come in competition with those of New York State. We have competition everywhere except, perhaps, from the New England States. We have demonstrated that we are not only able to meet this competition, but also to run our farms properly and maintain an existence in spite of cheap railroads and the competition of the whole United States; and I repeat that there is no body of farmers possessed of a greater amount of intelligence in practical agriculture than the farmers of New Jersey. By your action to-day you have advanced me from the ranks, and it remains for you to continue your work; you have placed me where I cannot do you much good, although it shall be my pleasure to serve you to the extent of my ability. I hope you will bear with me. With these few remarks I accept the position you have tendered me, with the understanding that it is the object to continue the work we have been doing and still further advance the standard of New Jersey's agriculture.

The Chair.—I have a new pleasure for you—to introduce to you the new Secretary, Mr. William S. Taylor, of Burlington.

Mr. Taylor.—It is hardly in order for the Secretary to make a speech, besides, I did not come prepared. This is a surprise to me. I trust I may be able to serve you to your satisfaction. The office has been ably filled by Mr. Quinn, and it will be my endeavor to attain an equal proficiency and skill in its management. I thank you for the honor.

Mr. Parry.—The committee appointed to report on the exhibits on the tables before you, are now ready to submit their report.

The Chair.—If there is no objection, we will hear the report of the committee.

Mr. Parry.—Judge Holcomb exhibits seven varieties of corn, large, fine-formed ears; two samples of oats, very fine—the Welcome and the Schoenon. Also a sample of shellbark, large and handsome; also sample of walnuts. We would recommend that more attention be paid to the growing of this class of trees. He also exhibits samples of butternuts, Mediterranean wheat, clover and timothy seed, Silver Hull buckwheat, two varieties of winter apples—the Pippin and the Russett—all large and fair. The whole exhibit is a very creditable

one in every respect, and we think it would be well were all the members of the State Board to make similar exhibits.

E. Cook, of Burlington county, exhibits samples of Golden Dent corn, very large, bright and handsome ears, making a very nice exhibit.

Aug. Vandervere, of Manalapan, exhibits three varieties of corn—the Large Yellow Dent, Large White Dent and the Queen of the Prairie; very fine ears and very creditable exhibits.

Joseph B. Roe, of Gloucester county, exhibits a basket of very large and handsome yellow sweet potatoes. The strange part of this is that these have been grown entirely without stable manure, or manure of any kind other than fertilizer, about 1,000 pounds per acre—Mapes' being used. This fertilizer was scattered in the row; the potatoes were planted June 1st, and yielded 560 baskets to the acre. A very creditable exhibit.

J. M. White, of New Brunswick, exhibits samples of Bellflower apples, very fine looking fruit, and three varieties of fine potatoes—Early Ohio, Beauty of Hebron, and Early Rose.

F. Dye, Mercer, exhibits seventeen varieties of very fine potatoes, grown by different kinds of fertilizers—Early Hebron, Vanguard, Early Rose, State of Maine, St. Patrick, Rosy Morn, Garfield, Dakota Red, Blush, Pearl of Savoy, White Star, Lees' Favorite, White Elephant, Early Ohio, Late Hebron, Burbank, and No Name.

One can of canned peaches also exhibited—exhibitor not named.

Very creditable samples of dairy butter, and samples of oleomargarine are also exhibited on the table.

Thomas J. Bean exhibits a fine sample of the Ben Davis apple.

In this connection we would like to say that the varieties of potatoes exhibited by Mr. Dye were grown with five different samples or kinds of fertilizers—Smith's, Taylor's, Baker's, Ralston's, and home-made. These were all made at an equal cost per acre, using about 800 pounds to the acre. The yield was about the same with each kind of fertilizer used.

Those planted April 25th were seriously injured by the wire worm and scab; those planted on May 10th were almost entirely clear from blight.

The heaviest yielders were the varieties known as the State of Maine, Early Rose, Late Hebron.

The earliest were the Early Ohio, Pearl of Savoy, Early Hebron, Early Rose.

The finest and most vigorous were the Blush, Rosy Morn, State of Maine, Late Hebron and St. Patrick.

Mr. Eli Minch, of Shiloh, N. J., exhibits three varieties of potatoes, all fine and good-looking specimens—the Early Rose, an unknown variety which he suggests shall be called the Silver Lake, and another variety which was grown for Magnum Bonum, but which do not show the characteristics of that variety.

This gentleman also exhibits a specimen of an annual growth on the ends of the limb of a four-year-old peach tree, showing a new growth of three feet and six inches of wood, very strong and healthy, nearly one inch in diameter, grown by the liberal use of kainit and fine bone. Where the tree now grows so vigorously was formerly, before the use of the special fertilizer, so unfavorable to the growth of the peach that they always died before fruiting, by that so-called disease, the yellows.

Also exhibited by the same gentleman, from the same soil, a bough showing the sign of growth from the same fertilizer, with the addition of nitrate of soda.

The second specimen shows an annual growth of over three feet, well boughed and stout and vigorous.

These specimens show the value and the effect of the use of fertilizers in peach growing on unfavorable soils by the use of special fertilizers.

If such growth can be made as the exhibits show, the peach can be successfully grown on soils and in situations that have heretofore been deemed unprofitable for peach growing, and also opens up a wide area for peach growing.

Your committee can but speak highly of the exhibits before us, and we only regret that more of the same kind of interest is not taken by other members of this State Board.

Let us another year have fuller and larger exhibits even than these.

Signed,

WILLIAM PARRY, J. H. BALDWIN, J. W. DICKINSON,	}	Committee.
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On motion, report adopted.

The Chair.—The Chair would like to say in this connection that, while a member of the Executive Committee, he feels personally under obligations to the gentlemen from Camden and Burlington counties

for bringing forward samples of genuine dairy butter. They are from the best of stock, and enable you to compare them with samples of oleomargarine, which I have brought. I should like this committee to amend their report so as to thank these gentlemen for their exhibits.

Mr. Rogers.—The Committee on the Bird Law reports as follows :

WHEREAS, It has been made known to this Board that there are two bills now before the Legislature, tending to restore protection to the bird commonly known as the English sparrow, and to declare the familiar red breast, known as the robin, to be a game bird by depriving it of the protection now afforded by the insectivorous bird law ; therefore,

Resolved, That we hereby renew our protest against any legislation whatever that will serve in any way to protect the bird familiarly known as the English sparrow.

Resolved, That we also protest against any legislation tending in any way to declare the robin, or any other insectivorous bird, a game bird, and thus deprive it from the protection now offered by the insectivorous bird laws.

The Chair.—You have heard the report of the Committee on Bird Law. What is your pleasure?

Mr. Roberts.—I move that the Executive Committee of this body cause this resolution to be presented to the Legislature by the President of the Senate and the Speaker of the House.

On motion, the report as amended is accepted.

Mr. Baldwin.—I move you, sir, that a vote of thanks be extended to President Dudley and Secretary Quinn, for the very faithful and capable manner in which they have discharged the duties of their office.

Motion carried unanimously.

The Chair.—We have with us to-day Prof. Atwater, of Middletown, Connecticut, a gentleman of whom you have all heard and who needs no introduction. I have the pleasure of introducing to you Prof. Atwater, who will now address you. (See Prof. Atwater's address, following these minutes.)

Mr. Dye.—I have an invitation to extend to the State Board to attend the meeting of the Mercer County Board. If you are in Trenton on the days we meet, drop in the Court House ; we will be glad to see you. We meet on the fourth Tuesday of this month. The meetings of the Mercer County Board of Agriculture are held on the second Tuesdays of June and August, and on the fourth

Tuesdays of February and November, and the members of other County Boards and of the State Board are cordially invited to meet us at any of our meetings. We expect to have a very able address also.

Mr. Ward.—I have a resolution to offer—a resolution prepared with regard to a national system of weights and measures. I simply desire that this be referred to the Executive Committee of the State Board of Agriculture, with the desire that they take such proper steps as to have the matter brought before the proper authorities.

With our constantly and rapidly increasing State commerce in fruits and other products of the soil, the necessity of having a national standard of weights and measures, to be enforced throughout the Union, becomes more and more apparent. In the first place we need a standard barrel and half-barrel for measuring and shipping apples, pears, potatoes, onions, &c., for, as it is now, a person contracting for a certain number of barrels of produce may receive a very different quantity from what he expected and paid for. It is also quite common to ship potatoes, onions, &c., in bulk or bags, and on arrival in market to sell them by the barrel. Let a standard of weights be fixed for these articles for a barrel and bushel.

A miller is bound by law to give 196 pounds of flour to a barrel. Why should not the growers and dealers in fruits and produce be compelled to give a stated quantity also?

The shipping of fruits and vegetables in crates and boxes has become a custom which has a tendency to foster frauds, on account of the absence of all law regulating their size, and I know of no better way to control this point than to confine all sales to the national standard of cubic inches to the bushel, and the sixteen and eight quart fractions, with the single exception of oranges and lemons.

Two varieties of berries, which are shipped in boxes and are cursed with this cheating process worse than any other articles, are the cranberry and the huckleberry.

In Massachusetts a law was prepared for the benefit of the cranberry growers, defining a bushel of this fruit to be 32 quarts, level measure, and a barrel must contain 100 quarts, level measure. No dimensions were given for a box or barrel to contain this quantity, and the result is, we find, that there are put on the market four sizes of boxes, each of them claiming to contain the legal quantity, yet they differ in capacity 198 cubic inches, or three quarts.

The New Jersey Legislature passed a law defining the number of cubic inches a box or barrel must contain of these berries, but it had no force outside of the State, so the growers shipped in any size boxes they saw fit. A New Jersey standard box contains 2,211 cubic inches, or a trifle more than the legal standard, which is 2,150.42 for a bushel.

The head of a New Jersey standard box is twelve inches long by eight and three-eighths inches wide. A difference of a half inch in the width of the box will make a difference of two quarts in the quantity of the fruit, yet but few purchasers would detect the difference in the haste of buying, so one can see the necessity of compelling all to use the same measure.

In the early history of marketing huckleberries a successful effort was made to use one shipping box, to contain sixteen quarts. For years this plan worked well and pleased both shippers and purchasers, but in time they began to cut down the size of the box until now, when, perhaps, there is no line of fruit sent to our market the sale of which is carried on so dishonestly as this, for many of these boxes do not contain more than eight quarts.

There seems to be a radical defect in our wood measures, for we find that some States ignore them, to a certain extent, by passing laws that a bushel of a certain grain must weigh a given number of pounds. In this instance the size of the measure is ignored and weight substituted. Now, if weight is to be the standard, why not give a national weight instead of States giving separate and distinct ones? The United States determines the number of cubic inches to make a measure to be known as a bushel, but States ignore it. Does this disposition to override the national laws develop patriotism or only selfishness, and if a State has the right to ignore the national law of measure, has it not the right to ignore all others? The selling of our native nuts should also be regulated by law, confining their sales to the weight.

I have made a single exception to boxes in favor of those used by the Florida fruit growers to pack their oranges and lemons in. The growers of these fruits deserve honorable mention, for they mark the number the box contains on one end, so that the purchaser can see at once how many he buys.

The entire system of making baskets for the shipping of fruits needs a revision, and the passing of a stringent law governing their

size, which should be confined to the sixteen and eight quart level full legal measure, with the exception of berry baskets, which should be confined to the quart, pint and half pint, level measure; then we will have all the sizes we need for trade or profit.

Suppose one buys a barrel of apples, potatoes or onions, expecting to receive one of the flour barrel size, but instead receives one which contains only two and one-third bushels, instead of two and three-quarters bushels, what redress has he by law? None. He receives just what he bought—a barrel, that means nothing but a number of staves bound together with hoops, and having heads at the ends.

The same can be said when one buys a basket of any of these articles; the dealer has the privilege of cheating the consumer all he can, and how thoroughly these sidewalk dealers and licensed vendors understand this when they offer the thin, gaunt baskets, or the one-third quart cup for a pint and the reverse end for a half pint.

When the consumer buys a barrel of flour and finds it deficient in weight, or sugar, tea, or coffee, he can get immediate redress through the law. Why should he not be entitled to equal redress when he is defrauded in purchasing fruits? But he is not.

The commission merchant who is desirous of protecting a grower who ships honest packages cannot always do it, for if one man sends him a box of berries containing thirty-two quarts, and his neighbor sends one holding only twenty-eight quarts, he is expected to aid the one who cheats in measure by returning him the same price for twenty-eight quarts that the other received for the thirty-two quarts. If he does not he will not make him the second shipment, but try another who will.

The retailers who wish to deal honestly are compelled to meet in competition dishonest men who cheat in every form they can to make money, and the entire trade in fruits and produce is open to their operations.

There is hardly a subject that deserves more careful consideration than this, the establishment of standard measures. For the want of such laws our fruit growers and farmers have been defrauded of millions of dollars, and it is high time that this matter should be agitated by all Agricultural Societies throughout the land. Let our Society be the one to start it.

The resolution to refer to the Executive Committee was adopted.

Mr. Haines, Camden.—I have a resolution to offer. I do not

think that the present manner of offering premiums is fully satisfactory, because I do not think the people receive the full benefit of the money expended by the State.

I think the State Premium Committee should try to adopt some different plan of giving these out, so that the people of the State should know how the results for which the premiums are given are produced. I therefore offer the following resolution as recommended by our County Board.

(See resolution No. 2, Camden County Report.)

On motion, the resolutions were referred to the Committee on State Premiums.

The Secretary read the memorials as offered by Burlington County Board.

On motion, they were received, indorsed by this State Board of Agriculture, and directed to be forwarded to our Senators and Representatives in Congress.

The Chair.—I will announce the State Premium Committee, as follows :

T. F. Baker, Cumberland; P. T. Quinn, Essex; F. S. Holcomb, Hunterdon.

President Burrough (Mr. Ward takes chair.)—There has been a paper presented to the Executive Committee, which, I presume, is among the papers referred to us for future action. I would like to offer the following resolution :

WHEREAS, The history of the Duroc Jersey Red Swine, as presented to this Board by Col. F. D. Curtis, clearly defines the origin of the Duroc swine to be separate and distinct from the Jersey Red swine, of this State, now so widely and favorable known; therefore,

Resolved, That the thanks of this Board be and are hereby tendered to Col. F. D. Curtis for his paper on the Duroc Jersey swine; and

Resolved, That from the best information to be obtained by this Board, the Duroc Jersey Red swine are not the true Jersey Red swine of this State; and

Resolved, That we hereby respectfully, but earnestly, call upon the Duroc Jersey Swine Association to strike out and eliminate the word "Jersey" from their records, thereby avoiding any confounding of the two breeds by the different swine breeders' associations.

On motion, resolution adopted.

The Chair.—Before we adjourn, the Chair would like to impress upon the members of the Board the necessity of a close attention to

the work in the County Boards. This is very important. We must do all we can to create these County Boards and to encourage them. Each County Board should do what it can to help the work along, and it should also be represented at the meetings of the State Board. It should also bring or send a synopsis to this Board of the work of the year just passed.

I trust that our meeting next year will see a County Board in every county of the State. You will in this way reap the benefits of this organization, and it is a matter of the utmost importance.

We shall never be in full working order until the counties are all organized. You must get to work, and work to achieve this end. Do not fail to attend the meetings of your County Boards. Make your county meetings interesting and you will have the whole county attending them after awhile. Attend the meetings of the State Board also, and make this meeting interesting to all.

At this point the meeting adjourned.

President's Annual Address,

DELIVERED BEFORE THE STATE BOARD OF AGRICULTURE,

IN MASONIC HALL, TRENTON,

ON TUESDAY, FEBRUARY 2, 1886,

BY

HON. THOMAS H. DUDLEY.

PRESIDENT'S ANNUAL ADDRESS.

GENTLEMEN—Another year has come since we last met. The old year, with all its joys, its sorrows and its cares, has gone. The spring-time, with its birds and flowers; summer, with blooming fields and gay landscapes; autumn, with its rich harvests and ripe fruits, and winter with its hoar-frosts and snows, have come and filled their allotted space in time, as the rolling year has passed away. A new year, with its hopes and aspirations, is before us. There are cares to be met, problems to be solved, and duties too numerous to be mentioned to be performed.

Every man has his place in the world, and every one, whatever his rank or station in life or the pursuit he may follow, has his place to fill, and no person a more important one than that of the farmer.

We are too apt to look upon man from the standpoint of the profession or calling he follows in life, and to judge him from that standpoint and limit his capacity, and to some extent tie him down to that calling or that pursuit, without taking into consideration that the boundless universe, with all its unknown secrets and treasures, is open before him as they are to all others, and the duties and obligations he is under as a member of society to do his part towards exploring and utilizing these for the benefit of mankind.

You are agriculturists, yet there are other duties which rest upon you besides planting and gathering; besides the times of seeding and harvesting your crops, important as they are. You have, as members of society, in common with all others under the government, incurred duties and obligations which you cannot and ought not ignore even if you could. To some of these I propose to call your attention.

Before doing so I will refer again to the subject of India wheat, which I discussed a year ago. I then told you of the increased production of wheat in that country, how it had grown up within the past four or five years to millions of bushels; that it was being imported in large quantities into England, France and Belgium, and had

reduced the price in these countries as well as here at home, and was then seriously competing with American wheat in all these markets. All that I then said has been fully confirmed. Whilst our crop of wheat was less, theirs in India was more during the past year. Ours was computed at 430,000,000 of bushels, being much less than the preceding year, when it was over five hundred millions; the crops in India for 1885, was computed at 286,000,000 bushels, being twenty millions over the preceding year.

It will be observed that the crop in India is now more than half as much as what we raise in the States. And though our crop of wheat was less, and our shipments to Europe less than the year previous, the prices instead of improving have fallen in Europe. To show you the extent and effect of this competition, I will read to you an extract from a letter received by me from a corn merchant in Liverpool. Under date of December 19th, 1885, he writes as follows: "Our supplies of wheat, despite such reduced American shipments, are superabundant and prices never so low as this autumn, fully three pence nearly four pence under last year. And still it comes. India appears inexhaustible. My sons, the active partners in the house, are selling ten times as much Indian as American wheat." Probably there is no house in Liverpool that deals more largely in grain than the one he is connected with, or any man who is better informed on these subjects. The great difficulty in India has been in the cost of transporting the wheat to the ports of shipment. The price has been about double from Delhi to Bombay, a distance of 822 miles by rail, what it is from Chicago to New York, a distance of 911 miles.

But the costs have been somewhat reduced. The price of farm labor in India is from six to seven cents of our money per day. The laborers feed themselves out of these wages. The railroad facilities are being increased, which will open up large tracts of rich, cheap lands, equal in fertility to any we have for wheat culture, and which heretofore have had no communication with the seaboard. With these large tracts opened and their abundant cheap labor, there is no reason why, in the very near future, they will not produce double the quantity of wheat they are now producing.

This India wheat can be laid down in the London and Liverpool markets at seventy-five cents per bushel, which is lower than our farmers can do it, and at these prices it will pay the India farmer a larger profit than our farmers are now realizing on the wheat they

sell. This India wheat can be brought to New York by way of the Suez canal for eighty cents, and, but for our protective duty of twenty cents per bushel, it could be laid down there at that price. With the duty added, it can be now placed in New York at one dollar per bushel.

With the reduced rates of transporting wheat to the seaboard, which will follow when new and competing roads are built, as they soon will be, opening up and developing the country; with their cheap and fertile lands, and the low price they are paying for labor, the India farmer within the next ten years will be in the United States with his wheat, competing with our farmers here in our own home markets, unless the present duty of twenty cents per bushel shall be increased. Our farmers should note these facts and take steps to protect themselves. As matters now stand, they cannot expect better prices than they now receive, unless a bad harvest, a famine in India, or a desolating war should intervene to put them up.

By the last national census the population of our country amounted to over fifty millions of people; of these there were but 17,392,099 or 34.68 per cent. who pursued gainful avocations, or, in other words, earned wages, leaving 32,763,684 persons, or 65.32 per cent., who followed no gainful avocation, consequently earning nothing.

A portion of these, no doubt, lived off of their income, but the much larger portion off of those who were earning wages. Of those who earned wages, 7,670,493, or 44.10 per cent., were engaged in agriculture. If we assume that most of the persons who were not earning wages were living, either directly or indirectly, off of those who did earn them, then we will have out of our population, at that time, of fifty millions, over twenty millions of people who were dependent upon agriculture for their subsistence.

This was not quite half of our population, but there was no other single industry in the country that sustained or supported anything like the number that agriculture did. Since then the country has greatly increased in population. It no doubt now contains upwards of fifty-six millions of people, distributed among the different industries, and divided, as to those who earn wages and those who do not earn wages, about in the same proportion or ratio as they did when the last census was taken. I refer to this matter and give these figures to show the important part, numerically, that agriculturists occupy, and the part they play or should play in political matters

connected with the government of the country, aside from raising the food upon which the whole population subsists. They feed all the people, and every industry, whether great or small, is dependent upon them for food; indeed, it has, by some, been claimed that agriculture is the basis or foundation upon which all other industries stand.

Feeding all, and numbering as they do so large a proportion of our population, their influence and power in the government, and in the associations of men, religiously, politically and socially, must of necessity be very great. This being so, I propose very briefly to call your attention to some of the responsibilities and duties which rest upon you politically as members of society. Living, as we do, in a government formed by the people, for the benefit of the people, duties and responsibilities are entailed upon all of us of the most important and weighty character; and on none more than the farmer. No one lives for himself alone, or in a government like ours has a right so to live. He lives, or should, for those who are about or around him as well as for himself. Neither does he live exclusively for the present; his duties, to some extent, are those of a trustee, and reach far out and beyond his present life; he lives for those who are to come after him as well. He is bound in the proper discharge of his duties in life so to live and conduct himself as to do as much good as he can for others as well as for himself, and to do all in his power to perpetuate and hand down to posterity the free institutions of the country unimpaired; and that man who does not so live, and so act, fails in the proper discharge of his duties as a man and as a member of the society in which he lives.

The agriculturists from numbers alone can do much towards shaping public opinion, directing legislation, and giving character and tone to society. They can do much towards eradicating wrongs and abuses which may have grown up. They can do much towards keeping the ship of state, laden as it is with the hopes, the aspirations, the happiness and welfare of the millions who are borne upon it, steady on its course.

The part which they can and should play is so great and important that it is difficult to define or set limits to. They may do great, almost incalculable, good, or if indifferent or neglectful of their duties, may be of but little service to any one; and the world or mankind will not be much the better for their ever having lived. It seems to me that the time has fully come when this great industrial class should come

out and take a more active and prominent part in the affairs of the government than they now take, and make an effort to correct and eradicate some of the abuses and evils which exist, and which are threatening if not undermining the system of free government. No people have more interest in maintaining the government than they.

They should see to it that none but such as are qualified and fit, be taken up or elected to office; and when dishonest or incompetent people are nominated, defeat them at the ballot-box, it matters not to which political party they may belong, remembering always that country is above party, and good government and the happiness and welfare of the people of more consequence than the success of any party, and above every other consideration.

In laying down these propositions, I do not wish it to be understood that I oppose parties and the formation of political associations; far from this. I believe that these organizations are, to a certain extent, useful, if not necessary, to good government. Constituted as man on this earth is—indeed, formed by God as we all are, with different ideas, habits and thoughts, no two human beings in the world alike—it cannot be supposed that all will think alike or act alike, or come to the same conclusion, upon any one given topic or subject. They necessarily will differ one with another; some will regard a matter in one way, whilst others, equally honest, will look upon it and see it quite differently. With this great diversity then that we find among men as well as in nature, it cannot be supposed that all mankind will agree upon any set of propositions or principles, either political, religious, or social, however just or proper they may be. This cannot be expected, even if it was desirable that it should be.

But there are many reasons why it is best that things should be just as they are, and that all mankind should not agree.

God knew what was best when He created all. And what He has done, no doubt, is for the best, though we cannot at all times so see it.

Opposition in human affairs stimulates and leads to greater efforts.

The water that runs does not stagnate, and the atmosphere itself is purified by the storms.

And in the political world the formation of different parties has much the same effect as the disturbance of the elements in the physical world around us. It prevents degeneracy, stagnation and decay in the body politic.

The formation of political parties in a government like ours, there-

fore, is not only proper and beneficial, but may be regarded as almost a matter of necessity. And so long as they are faithfully and honestly conducted, are a great support, as well as safeguard, to the government and the rights and liberties of the people. If there are two parties, one will watch the other and expose its weaknesses and errors, and check the abuse of power if attempted.

While this is so, and the beneficial effects of parties are fully admitted, there is another side to be contemplated; there are abuses which may grow up in parties which may endanger, if not overthrow, the political fabric itself.

Like all other good things, through over-party zeal or bad men, parties may become corrupt and debased, and the machinery run for corrupt and selfish purposes, to the great injury, if not danger, of the government.

It looks much as if this were the tendency of political parties to-day, as if both were being run on the downward track. Whether this is entirely true and things politically are as bad as some believe, it must be admitted that there are at the present time indications and evidences of great abuses, and in this State as well as others, to which the attention of the public should be called, with a view, if possible, to their correction before it is too late; abuses which threaten the foundations of all free government. It is to some of these I wish to call your attention, and first among them are frauds at our elections; and this applies to the primaries as well as to the general elections. Many of the primary elections in the towns and cities held for the election of delegates have become a farce.

Money is freely used to secure the election of delegates, and sometimes to influence the judges of election to make false returns. Tissue ballots and, in some instances, ballot-boxes with false bottoms have been used, and the grossest frauds perpetrated.

And these practices, in many instances, have not only been connived at, but planned and carried into execution by men who stand high in society and fill important political offices of honor and trust. In some localities and communities they have become so common and notorious that they are openly admitted, and constitute the town talk and political scandal of the day. Fortunately for the people, as yet, it is believed that these shameful practices at the primaries are confined mainly to the towns and have not extended to the rural portions of the State, and that the great agricultural community are comparatively, if not wholly, free from them.

This is fortunate, for where the pollution is confined to a part only, there is not so much danger; it is only when the whole becomes contaminated that hope leaves and despair takes her place to mourn over the shattered wreck that remains.

Where there is not a free and honest ballot, there is no longer a free government. It may exist in name, but it does not and cannot exist in substance. It is a baseless fabric, a form without substance, and sooner or later must go down. Such it is believed is the condition of some of the political primaries in our State, and, if true, it must be admitted they show a deplorable condition of things in politics. Men who will resort to such practices and frauds in their own party, and against their own associates and political friends, will not hesitate to perpetrate the same, if not worse and still more glaring, at the ballot-boxes, against their political opponents when party zeal or interest prompts them to do so.

Educated in such schools as some of the primaries in the cities are, the men connected with them will make apt and ready scholars for all kinds of frauds and crimes at the ballot-box.

Unfortunately, the tendency of things in our cities is to leave, in most instances, the management of the primaries in the hands of the worst part of the community; the better part of the people, or those most capable and best qualified, remaining at home, some from indifference and others giving business, want of influence or degradation of politics as an excuse, forgetting that, in a free government like ours, it is the duty of each individual to come out and take part in political matters, and that, without regard to his sensibilities, his business or his personal comfort, a duty he owes to himself, to his family and his country, and one he has no right to ignore or shirk. The performance of this duty is a part of the price he pays for the privileges and liberties he enjoys, under a free government, and no man can or ought to excuse himself from it. Indeed, no man's hands are clear of mal-administration in public affairs, unless he has discharged this duty, and that without regard to any selfish consequences to himself personally.

The tendency in our towns and centers of population being in this direction, we have only the rural or agricultural part of the country to rely upon. It is said by some that it is the infusion of country blood from the rural districts that keeps our cities alive; and it may be, indeed is, quite possible, that the agricultural part of our commu-

nity may, in the future, become the vitalizing power that will preserve our free form of government, the source that will infuse health and life in the body politic and keep it free from pollution and death.

The same frauds practiced at the primaries may be practiced and often are at the elections. Repeating, personation, tissue ballots, fraudulent returns and false certificates of election to accomplish the wicked purposes of defeating the will of the people as expressed at the ballot-box.

It seems strange that people can be found so vicious and depraved as to be willing to violate the law of the land and commit crimes merely for the success of their party, and that often when they have no personal interest in the result. But such, unfortunately, is too often the case.

Another practice which is equally reprehensible, and which is working great injury and believed to be growing, not only in this State, but throughout the country, is that of buying votes at the elections—bribing the voters. This is done sometimes openly and sometimes in a roundabout way. It is a notorious fact that money is contributed and raised in large sums for this purpose. There are expenses at every election which are legitimate and proper. Money to get up public meetings, to pay persons for canvassing; to hire carriages to enable the old, lame, sick and distant voters to reach the polls, &c. And it is no offense, but proper, to contribute money for any of these purposes, and, if used in this way when contributed, no wrong or injury would be done. But, alas! the money expended for these purposes is small and insignificant as compared to the large and almost fabulous sums used for bribing voters.

To such an extent is this carried, that the success of the one party or the other, or at least of the one or other candidate who is running, depends in many instances almost entirely upon the amount of money that is put into the election, so that the election turns, not upon the merit, fitness or qualifications of the candidate, but upon the money contributed. The man who has the most money to buy votes wins.

Thus, men are elected to your Legislature and to fill almost every office of honor or trust in the gift of the people—not because they are worthy or qualified to fill the office, or to discharge the duties when elected, or even because a majority of the people desire them elected; but because they or their friends, who, it may be, want to use them for their own selfish purpose, contribute enough money to buy votes to elect them.

This practice of buying votes has become so common and so general by both of the two great parties in some localities that there is no longer remonstrance against it.

The most you hear is sometimes a feeble protest from a member of the party defeated that it was shameful the way money had been used to buy votes; but the great mass of the people, from custom, have come to look upon it with 'cold indifference, if not approval, and in this way the wrong is permitted and tolerated, if not justified. We have laws on our statute book making it a penal offense to bribe voters, but, unfortunately, the laws against bribery and corruption are not enforced. They have almost, if not quite, become a dead letter, and the crimes under them go unpunished. With such doings, would it be a matter of much surprise if legislators thus elected should themselves be open to bribes whilst in office? It is a common thing to hear the corruption of the legislatures of the different States of the Union discussed, especially among politicians.

It was but a few years since we claimed that the Legislature of our own little State was free from corruption; that our lawmakers were pure and incorruptible.

Whilst claiming this for ourselves we were loud and unsparing in our denunciations of those where it existed. But how is it now? In all the elections for United States Senators that have taken place in our State for some years past it has been charged that thousands of dollars have been used to influence the votes to elect. In some instances it has been referred to in the public newspapers—the charges of the use of money to buy votes made openly, to the great scandal of the Legislature and those resorting to its use.

If these charges are true, they constitute a crime which nothing can justify. And the crime is all the same whether the money was paid direct or through others. It was the use of money to influence the vote that constituted the crime, it matters not how or by whom it was paid. If money has been used to influence the members of the Legislature in their votes for Senators, may it not have been used to influence votes in legislation as well? Let us hope not; but with the great corporations, and especially the great railroad corporations running through our State, the temptation to use it to influence legislation where these corporations are interested or imagine themselves to be so, is great.

There is much danger of this, too, where there are conflicting inter-

ests between rival roads, and still more where any of these corporations attempt to interfere with the politics of the State, either directly or indirectly, through their officers or agents, whom they put forward or permit to come forward and take part in politics or hold political offices.

Railroads are necessary for the proper development of the State and the intercourse between different localities by the people. Indeed, the business of the country could not be carried on without them. They ought, therefore, to receive all proper and necessary protection. No unnecessary restrictions should be imposed upon them, or the exercise of their corporate privileges interfered with. All these they should be permitted to enjoy in full, but beyond this they should never be allowed to go. The people have rights as well as the the corporations, and these rights are sacred and should not be intrenched upon. Among these is the right to regulate and carry on the government. No corporation ought to be permitted to interfere with this or to take part in the politics of the State, much less to control or hold political offices. No State or people should tolerate or permit this. Any railroad that acts properly can obtain all necessary protection and legislation in the State without interfering with politics. The people will always be willing to accord them this, and they ought not to expect, much less ask, for more.

What is right they should have; what is wrong they ought not to ask.

Situated as New Jersey is, between the two great States of New York and Pennsylvania, our people should watch with jealous care all attempts of corporations in either of those States at interfering with our politics, or intrenching upon the rights of the people.

This is all the more necessary, from the fact that some of the great railroad corporations of these States have obtained control and are now running many of our railroads. Any attempts of these corporations to interfere or control our politics, either directly or indirectly, through their officers or agents, should be resisted. Our people should say to all of these corporations: You may exercise your corporate privileges and run the railroads, of which you have obtained control, but you cannot and shall not run our government. We, as Jersey men, consider ourselves quite competent to do this, and that without your interference.

Our courts have always been regarded, and very justly, as the pal-

ladium of our liberties. Whilst charges of corruption have been made against some of the other co-ordinate branches of our government, it has never been made against the judiciary. Thus far it has not been charged that bribery or corruption to any extent has ever reached or influenced our courts.

According this to the whole country, we claim, and with just pride, that no State has a more pure judiciary than our own. In our history as a State and nation, this branch of the government has escaped criticism in this particular. While reflecting men have trembled over the corruption and venality around them, sometimes even in high places, they have taken courage when they turned to the judiciary.

Confidence is justly maintained in our courts, and we have come to regard them as the sheet anchor of our safety for the present, and our hopes for the future.

I have referred to these matters because I think the time has come when all patriotic men, it matters not to what party they may belong, should pause and look squarely at these questions, and I have called your attention to them, because you are farmers, and represent numerically, as we have already seen, the largest industry of the country, and consequently at the polls exercise the largest political power or influence.

Sturdy, honest and independent as a class, you have yielded less to the seductive influence of money in political matters. Its corrupting influence has not been much felt as yet in the votes you have given. It is therefore to the farmers of our country, so it seems to me, to whom we are mainly to look for the correction of these abuses. They have it in their power to check them whenever they will determine to do so, and go to work in earnest to accomplish it. Let them in a body, as a class, but resolve to stop it and it will done.

If they determine that no persons but such as are qualified and fit shall be taken up for office; and no one who is not competent and fit to fill the office, or who has secured his nomination through fraud or corruption, shall be elected, even if nominated, it matters not to which party he or they may belong, they will stop this business and purify the political atmosphere.

I know how binding party ties are. I know, too, the infirmities of poor human nature, and how easy it is to yield our judgment and permit it to be influenced and warped by our party or political associates, and how hard it is for any one to break from these, and to come out and

pursue an independent and patriotic course; yet every one should remember what has already been said, that country is above party, and good government and the welfare and happiness of the people far above and beyond all party considerations or party organizations, or the aspirations or ambitions of any individual, however exalted he may be. If we would but for one moment reflect that parties should only be formed and run for the government, and government never run for the parties, it would be more easy to be patriotic.

From what has been said it must not be inferred that all persons engaged in agriculture are patriotic and pure, or that there are no good and virtuous among the other classes of society. I do not intend to convey any such idea. There can be no doubt but what there are just as corrupt men among the farmers as there are in the other classes; and that there are as pure and upright men in the other branches of industries either in town or country as there are among the farmers. I fully admit this. Constituted as society is in this world, there are and ever will be good and bad in all circles and classes of society. There is no condition or calling exempt.

All that is claimed is that which has been before stated, that the agriculturists, residing as most of them do in the rural portions of our country, when taken as a whole or class, have not yielded to the seductive and corrupting influences of money in the matter of politics to the same extent as the other classes, especially those living in our towns and the thickly settled parts of the country.

Neither can it be claimed that either of the political parties in our State is exempt from these criminal practices. Unfortunately we have too many examples showing that both of the two great parties are guilty. Both parties have used money to bribe and corrupt the voters; both of the parties have resorted to fraud to defeat the will of the people as expressed at the ballot-box; and both of the parties or individual members of the party, as has been charged, have used money to influence votes in the election of United States Senators.

To such an extent has the use of money been carried, that it has almost come to this, as is charged, that the one who has the most money can always win. This is sad and humiliating, and all the more so because, as is claimed, both parties are guilty. If one party were free from it we could then direct all of our efforts against the guilty one and eradicate the evil; but when both are guilty it shows a diseased condition of society to be deplored, and one that is well calcu-

lated to excite uneasiness, if not alarm, among all who love their country and desire free government preserved and perpetuated. The more deep-rooted and general the disease, the harder to eradicate. If permitted, like a cancer it will eat into the core, destroying all vitality and life, and at last the political fabric itself will crumble and fall.

Corruption and decay will soon eat the heart away.

"'Twere long to tell, and sad to trace
Each step from splendor to disgrace ;
Enough—no foreign foe could quell
Thy soul, till from itself it fell ;
Yes ! self-abasement paved the way
To villain bonds and despot sway."

If such was the fate of ancient Greece, whose ruins now only remain to tell us of her forever magnificence and grandeur, in the latter part of the nineteenth century, with all the progress we have since made, with all our education, with all our civilization, may we not expect a different fate for the largest and most prosperous republic the world has ever seen ?

Upon the people of this great country, and it may be largely upon the agriculturists of the country, the solution of this question depends. Let us all cherish the hope that there may be found virtue and patriotism enough to conduct us in safety through all the perils that beset us, so that we can hand down to posterity, for the benefit of the countless millions yet unborn, the free institutions of the republic, untarnished and unimpaired, and thus demonstrate once more to the world man's capacity for self-government.

ADDRESS

BY PROF. W. O. ATWATER, MIDDLETOWN, CONN.

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BY PROF. W. O. ATWATER, MIDDLETOWN, CONN.

MR. PRESIDENT AND GENTLEMEN—Some two years ago it was my privilege to be present at a meeting of your Board, and to speak on the chemistry of the feeding of plants. When your Secretary asked me to come again, I inferred from his letter and a little conversation that what would be most acceptable to you would be not a lecture, but a familiar talk in continuation of what was said when I was here before. In attempting this I will endeavor not to be too scientific, although I speak to you as a chemist, as a pure theorist, who knows extremely little about practical farming. I shall get on most easily if you will at any time ask questions. I have, as you see, a number of notes, but shall be most happy to leave them and take the time allotted and talk on any subject which pleases you most. Please feel free, therefore, to interrupt me at any point with your questions and suggestions. I am never so much at home as when somebody is firing a question at me. When my knowledge fails, as it is very apt to do, I have always a very easy answer, "I don't know."

I wish, first, to make some statements about the food of plants—what plants live upon, and how they get hold of those things out of the air and out of the ground; and secondly, about the different characteristics of different plants, in reference to their food and the action of fertilizing materials upon their growth. If there should be time, I will add something about differences in soils and of the application of these principles to the use of fertilizers.

If you should happen into my laboratory at any time, you might see us making chemical analyses. Suppose we are analyzing one of these specimens of corn or potatoes. (Indicating exhibits on the table.) We would put them into a kind of oven and dry out all the water. We should then take some of the dried material and burn it until

nothing was left but the ashes. We distinguish in the laboratory between these three different kinds of material occurring in all plants, no matter what they are: The water; the combustible portion, which we call organic matter, and which burns away; and the ash, the mineral matter. Now when the corn and potatoes are growing they must get all these materials for their growth from some source. The water, which consists of the two elements oxygen and hydrogen, comes from the air in the form of rain. This has fallen upon the earth mostly in the form of rain, has soaked into the soil and has been taken up by the plant through the roots. The mineral matter all comes from the soil. The most of the organic or combustible matter, which passes off in the form of gas through the chimney when the material is burned, comes from the air. It is composed of carbon, oxygen, hydrogen and nitrogen. I said that most of the organic matter came from the air. The carbon, oxygen and hydrogen are all from this source, though very nearly all the oxygen and hydrogen first came into the soil as water, which was taken up by the roots, while the carbon was taken probably from the air by the foliage of the plant. Much of the nitrogen, some chemists and vegetable physiologists say practically all, was taken from the soil by the roots of the plants. All the mineral matter, the ash, came from the earth. Our analyses show that the mineral matter consists of potash, soda, lime, magnesia, iron, phosphorus in the form of phosphoric acid, sulphur as sulphuric acid, silica, chlorine and sometimes other chemical elements and compounds. Every time we make an analysis of the plant we find these ingredients present. The plant cannot grow without them.

It will do no harm if I repeat some of the statements made here a couple of years ago, since I am sure none of you will remember what was said then. [Laughter.] Indeed, two or three requests since I have come here lead me to thus repeat, instead of giving you some other material I had prepared.

There is a certain list of the elements of the plant which must come from the soil. They include potash, lime, magnesia, iron, phosphoric acid, sulphuric acid, chlorine and nitrogen. If, now, our soils supply a sufficient quantity of each one of these ingredients, so that the plant could get out and use them, and if other conditions, temperature, moisture, etc., are favorable, then we have a large crop. But if any one of these essential ingredients is lacking, the crop fails.

Possibly some of you may recall in the former talk to which I referred, an illustration in the form of a picture of an experiment, which was made in Germany. It showed a number of buckwheat plants which were grown, not in soil at all, but in water, the water being contained in glass jars. In that water were put the materials which the buckwheat takes out of the soil while growing. These materials made up what you might call the normal fertilizing mixture. The plants grew wonderfully. One was nearly eight feet high, and had by actual count over seven hundred perfect seeds and enough imperfect ones to make a total of nearly one thousand grains. Such growth we never see in ordinary field culture.

What was the result in growing that buckwheat if one of the essential ingredients was not supplied? In one case the potash was omitted from the water, and instead of a plant eight feet high there was a little spindling affair only a few inches high. If but a small quantity of potash had been placed in the water, when the potash was exhausted the plant would have stopped growing. Careful observation showed that in the experiments without potash in the solution in which the roots were grown, the plant could not manufacture starch in the leaves. Of course, therefore, there was no starch to be transferred to the other parts of the plant. Where soda was used in place of potash, it did not help the matter. In like manner, when any other essential ingredient was omitted, the plant failed to grow.

Let me, instead of talking further of these very interesting experiments, briefly recapitulate what I have said, and add a few statements regarding the growth of plants in our ordinary soils and the proper use of fertilizers to help them grow:

1. Plants, like animals, require food for life and growth. A part of the food of plants comes from the atmosphere, the rest is furnished by the soil. No ordinary cultivated plant can thrive without a sufficient supply of each of a number of substances needed for its food. With an abundance of all of these, in forms in which the plant can use them, and with other circumstances favorable, the crop will flourish and the yield be large. But if the available supply of any one of them be too small, a light yield is inevitable. If all the other conditions for a profitable crop of corn, potatoes, or other plants, are fulfilled in the soil, except that potash is deficient, the crop will surely fail. But if the potash be supplied, the yield will be abundant.

2. The most important soil-ingredients of plant-food, the ones that the atmosphere cannot supply at all or not in sufficient quantity, and the soil or fertilizers must supply so that the plant can absorb them through its roots, are *potash, lime, magnesia, iron, phosphoric acid, sulphuric acid, chlorine*, and some compound of *nitrogen*. Plants also take silica, soda and some other materials from the soil, but these are needed only in minute quantities or not at all.

3. In removing crops from the soil we take away plant-food. This is the chief cause of soil exhaustion. Lack of fertility is commonly due, in large part or entirely, to lack of plant-food.

4. Soils vary greatly in their capabilities of supplying food to crops. Different ingredients are deficient in different soils. The chief lack of one may be potash, of another phosphoric acid, of another several ingredients, and so on.

5. Soils fail to furnish enough food to crops, not so much because they have not abundant stores as because the materials are not in available forms. A soil may have thousands of pounds of phosphoric acid within reach of the plant, but locked up in fragments of rock so that the roots cannot absorb it and thus the crop will fail for lack of phosphoric acid.

6. The infertility of many soils is due more to their mechanical condition, their texture, and relations to heat and moisture, than to lack of plant-food. Such soils want amendment first and manures afterward. Some soils will give good returns for manuring; others, without irrigation, or amendment by draining, tillage, use of lime, marl, or muck, or otherwise, will not.

FERTILIZERS AND PLANT-FOOD.

7. The chief use of fertilizers is to supply plant-food which crops need and soils fail to furnish.

8. But the indirect action of fertilizers in improving the mechanical condition of the soil and rendering its stores of plant-food available is often very important. Hence cheap materials like lime and plaster are frequently more profitable than manure or artificial fertilizers.

9. Plants vary greatly with respect to their demands for food, their capabilities of gathering the ingredients from soil and air, and the effects of different fertilizers upon their growth. Hence the proper fertilizer in a given case depends upon the crop as well as upon the soil.

10. The only ingredients of plant-food which we need to consider in commercial fertilizers, are *potash*, *lime*, *magnesia*, *phosphoric acid*, *sulphuric acid* and *nitrogen*. Of this list, *magnesia* is generally abundant in even "worn-out" soils. Sulphuric acid and lime are more often deficient, and hence one reason of the good effect so often observed from the application of lime and plaster. The remaining substances, the *phosphoric acid*, *nitrogen* and *potash*, are the most important ingredients of our common commercial fertilizers, because of both their scarcity in the soil and their high cost.

11. The chief use of commercial fertilizers, guano, phosphates, bone, potash, salts and special fertilizers prepared by formulæ for different crops, is to supply nitrogen, phosphoric acid and potash.

12. These materials are expensive, but the right ones in the right places are nevertheless very profitable. But the same fertilizers in other cases may bring little or no return.

13. It is not good economy to pay high prices for materials which our soils themselves may furnish, but it is good economy to supply the lacking ones in the cheapest way. Farmers cannot afford to use commercial fertilizers at random. No more can they afford to have their crops fail when a small outlay for the proper fertilizer would bring a bountiful harvest. And it is time that they understood these facts, the reasons, and how to make use of them.

14. The only way to find what our soils want is to study them by careful observation and experiments. Success in farming, as in other business, requires the use of brains.

VALUABLE INGREDIENTS OF COMMERCIAL FERTILIZERS.

Certain kinds of fertilizers sold in the markets furnish nitrogen and little or nothing else of much value for plant-food. Such are dried blood, meat scraps, sulphate of ammonia, and nitrate of soda. Others, as phosphates and superphosphates, owe their effectiveness mainly to their phosphoric acid. Still others contain both nitrogen and phosphoric acid. Such are Peruvian guano, fish guano, bone, and "ammoniated" superphosphates. Peruvian guano and fish supply considerable of both nitrogen and phosphoric acid, while bone and "ammoniated" superphosphates contain a large proportion of phosphoric acid and but little nitrogen. Potash is supplied in the German potash salts, the "muriate of potash," "sulphate of potash" and

kainit. The "complete fertilizers," or "special fertilizers," prepared according to formulas for special crops, as corn, potatoes, turnips, etc., contain all the above ingredients. Farm manures, stable manure, hen manure, etc., supply all the soil-ingredients of plant-food. Wood ashes contain all but nitrogen.

There are many cases in which crops fail because the soil does not supply enough phosphoric acid, and where an application of superphosphate or bone-dust brings a bountiful harvest. There are likewise many in which potash is especially deficient, and potash, salt or unleached ashes will supply the need. In some cases nitrogen in nitrate of soda or other form has the desired effect. In others nitrogen and phosphoric acid are needed, and Peruvian guano or fish may be used with great profit. In still others a mixture of superphosphate or bone-dust and potash salt, supplying phosphoric acid and potash, is the most economical material.

Again, on some soils and for some crops nothing short of a "complete" fertilizer will suffice; and very frequently where a partial fertilizer succeeds well at first, a "complete" fertilizer, after a time, becomes necessary, and often when a farmer does not know just what his soil and crops need, it is better to use a "complete" fertilizer than to risk loss of the crop.

And finally, while most soils respond to the application of manures, there are many on which all fertilizers fail. In short, the golden rule in the use of commercial fertilizers is to select those which supply, in the best forms and at the lowest cost, the plant-food which the crops need and the soil fails to furnish.

But after all this I have told only a part of the story. The effect of the fertilizer is decided by a great variety of circumstances. Among these the most important are: the soil, the climate and season, the feeding capacity of the crop, form of combination of the ingredients of the fertilizer, the indirect action of the fertilizer in changing the texture of the soil, and especially in setting free the plant food which the soil contains. And I might add to these the effects of tillage, of the composition of the plant, and finally the differences in seed.

You are well aware that your State Experiment Station has instituted a series of field experiments with different fertilizers which are being carried out, not only by the station itself, but under its supervision by a number of intelligent farmers in different portions of the State. A large number of experiments of the same sort were made several years ago by agricultural colleges, experiment stations and

private farmers in all the States east of the Mississippi, and several provinces of Canada. The plans were drawn up by myself, and the reports of several hundred were sent me for examination. Accounts of them have appeared in a number of publications, and I will not burden you with a repetition of them here, but will only call your attention to a few results bearing upon one or two points which I have just referred to; and this I may do the more appropriately as some figures and conclusions which I have here, have never yet been printed in the United States, though they appeared some time ago in a French chemical journal.

The general plan of these experiments consisted in applying different fertilizers to the soil and noting the effects upon the crops produced. The fertilizers contained nitrogen, phosphoric acid and potash either singly, two by two, or all three together. The nitrogen was supplied in the form of nitrate of soda, sulphate of ammonia or dried blood. The phosphoric acid was furnished in superphosphates—that is to say an acid phosphate like dissolved bone-black which contained also sulphuric acid and lime. For the potash, the German muriate of potash was used. The method consisted in dividing an acre of ground or more or less into long, parallel strips, leaving one or two of these unmanured and applying the fertilizers to the rest. Other fertilizers, such as bone, plaster and various farm manures, were also tried in many cases. The experiments were made with a great variety of crops, more with corn and potatoes, however, than with any others.

I will not stop to talk of the great variety in different soils, which the results of the experiments brought out, and will come directly to another matter—that which I have spoken of as the feeding capacities of the plants. By this I mean the varying powers which different plants have of gathering their supplies of food from the soil and air, and the consequent differences in the effects of fertilizers upon their growth.

A vast deal of experience in the laboratory and in the field bears concurrent testimony to the fact, though we are still deplorably in the dark as to how or why it is so, that different kinds of plants have different capacities for making use of the stores of food that soil and air contain. Of the ingredients of plant-food in our soils, the most important, because the most costly, is nitrogen. Leguminous crops, like clover, do somehow or other gather a good supply of nitrogen where cereals, such as wheat, barley, rye and oats would half starve for lack of it, and this in the face of the fact that leguminous plants

contain a great deal of nitrogen, and cereals relatively little. Hence a heavy nitrogenous manuring may pay well for wheat and be in large part lost on clover.

The experiments I have referred to throw some light upon this question, especially regarding corn, potatoes and oats. Among them were a considerable number of the so-called "special nitrogen experiments," in which the effects of nitrogen in different forms of combination and different quantities were tested. The nitrogen was supplied in the form of nitric acid, in nitrate of soda, in the form of ammonia, in sulphate of ammonia, and in the form which chemists call organic nitrogen in dried blood. With these, superphosphate and muriate of potash were employed. Omitting the results where the ingredients were used singly, let me give you a brief outline thus obtained with the complete fertilizers containing the nitrogen in different forms and amounts. These included in each case a mixture designated as "mixed minerals," which supplied 300 pounds of superphosphate and 150 pounds of muriate of potash per acre. To this mixture the nitrogenous materials were added in quantities sufficient to furnish on the different plots 24, 48 or 72 pounds of nitrogen per acre. The effects of nitrogen in the different forms of combination were on the average about the same.

I will call your attention, therefore, to the effects of different amounts, as I have them here concisely stated, in tabular form. I have figured out the amounts of shelled corn, potatoes and oats obtained per acre in the experiments with each fertilizing mixture, and give averages of all the experiments. If we take the average yield with the mixed minerals alone, that is to say, with all the materials which are ordinarily contained in commercial fertilizers, except nitrogen, at 100, the amounts with the different quantities of nitrogen will be as in the table herewith:

RESULTS OF EXPERIMENTS ON THE EFFECTS OF NITROGENOUS FERTILIZERS
UPON CORN, POTATOES AND OATS.

IN EXPERIMENTS WITH—			
	Corn.	Potatoes.	Oats.
Estimating the yield with "mixed minerals" at.....	100	100	100
The yield with mixed minerals and nitrogen, 24 lbs., was.....	111	127	154
The yield with mixed minerals and nitrogen, 48 lbs., was.....	112	138	166
The yield with mixed minerals and nitrogen, 72 lbs., was.....	115	127	171

That is to say, for every 100 bushels of corn obtained with the mixed minerals, we get, by adding 24 pounds of nitrogen per acre, 111 bushels; with 48 pounds of nitrogen, 112, and with 72 pounds of nitrogen in addition to the mixed minerals, 115 bushels. The yield of corn is thus increased slightly by the nitrogen, but the gain is extremely small—out of all proportion to the large cost of nitrogen. The potatoes give a much more decided response to the nitrogen, the 24 pounds increasing the yield from 100 to 127, the 48 pounds bringing it up to 138, while with the 72 pounds it is only 127. I should add, however, that the number of experiments with potatoes was much smaller than with corn. A larger number would give different averages.

The oats responded much more vigorously to the nitrogen, the yield rising to 171 with the largest amount. The number of experiments with oats was less, even, than with potatoes, but since in the cases where oats, potatoes and corn were grown side by side, the results tallied with the general averages here given, I think the experiments may be taken as indicating very decidedly that the corn is least, while the oats are the most, affected by nitrogen in the fertilizers. These experiments, so far as they go, therefore, imply that we should, in general, be sparing with our use of nitrogen for corn, that we may use moderate quantities on potatoes with profit, and that the oats are especially benefited by it.

There is another way in which the results of the experiments may be summarized so as to show the comparative effects of the phosphoric acid, potash and nitrogen on the growth of plants. Those of you who have read the writings of Ville are familiar with his ideas of "dominant" ingredients for different plants. Taking plants and soils as they run, Ville's ideas in this respect are hardly sustained by actual experience. Nevertheless, there appear to be very marked differences in the effects of phosphates and potash salts as well as nitrogenous materials on the growth of the plants, though differences of soil account for as much or more than the differences of the feeding capacities of plants in deciding the effects of the fertilizer. I have taken the results of 107 experiments with corn and potatoes and put them together in such a way as I think throws some light upon this part of the problem.

I remarked that the superphosphate, muriate of potash, and soda were used singly, two by two, and all three

now we take the yield with the superphosphate alone and subtract the yields where no fertilizer was used, we have a difference which we may attribute to the superphosphate. Again, if we subtract the produce with the muriate of potash alone from that of muriate of potash and superphosphate together, we get a second difference, which may be attributed to the action of the superphosphate. In the same manner we may subtract the yield with nitrate of soda, from that with nitrate of soda and superphosphate together, and obtain a third difference, and finally subtracting the yield with the nitrate of soda and the muriate of potash together from that with the complete fertilizer, we have a fourth value for the action for the superphosphate. In each experiment we thus have four different values for the effect of the phosphoric acid. In the calculations to which I refer, these four are put together and their averages are taken as a measure of the effect of the superphosphate in that experiment. In like manner we obtain an average of the four values for the potash in the muriate. A similar estimate may be made of the effect of the nitrogen in the nitrate of soda or other nitrogenous fertilizers as the case may be.

In some cases these different values for each ingredient—the superphosphate, for instance—are very uniform, in others they are extremely variable, and on examining these computations as they have been made for a large number of experiments, they seem to me to furnish one of the most severe tests of the accuracy and reliability of such experiments that could be devised.

Out of eighty field experiments with corn, but twenty-four were so free from the disturbing influences of unevenness in the soil, drouth, cold, etc., as to make them seem to me entirely satisfactory. And of twenty-seven experiments with potatoes, only twelve seem to me to be free from these same disturbing influences. Such are the difficulties which beset field experiments. When, however, we have a large number, we may take the average of the whole and be reasonably sure that the disturbing effects of unevenness of the soil will counterbalance each other to a greater or less degree, though experiments that are injured by drouth or wet, heat or cold, can, I think, hardly be taken as fair tests in the questions under discussion.

In some cases the corn responded very largely to the phosphoric acid, that is to say to the superphosphate, and paid very little heed to the potash or to the nitrogen. In other cases the corn responded very

largely to the potash, and paid little attention to the other ingredients. In a very few instances it refused to respond to either the phosphate or the potash salt, and at the same time was considerably benefited by the nitrogen. In tabulating the results, I have regarded the increase of less than four bushels per acre as too small to be taken into account, and in such cases have designated the fertilizing material, superphosphate, muriate of potash or nitrogen, as "inefficient." Where, on the other hand, the crop responded very largely to either fertilizing material and was increased by less than four bushels with either of the others, I have called the effective material "the regulating ingredient." Where the fertilizer could neither be the "regulating ingredient" nor inefficient, I have called it "more or less efficient."

The table herewith gives the results as estimated in this way. The "select experiments" are those which were reasonably free from the disturbing influences above referred to.

COMPARATIVE EFFECTS OF PHOSPHORIC ACID, POTASH AND NITROGEN IN 107 EXPERIMENTS WITH CORN AND POTATOES.

	SUPERPHOSPHATE (300 pounds) containing, besides Sulphuric Acid and Lime, Phosphoric Acid, P ₂ O ₅ (18 pounds), per acre.				* MURIATE OF POTASH (200 pounds) containing Potassium equivalent to Potash, K ₂ O (100 pounds), per acre.				NITRATE OF SODA (200 pounds) containing Nitro- gen, N (32 lbs.), per acre.			
	Regulating ingredient.	More or less efficient.	Inefficient.	Total.	Regulating ingredient.	More or less efficient.	Inefficient.	Total.	Regulating ingredient.	More or less efficient.	Inefficient.	Total.
Corn—80 experiments.....	27	35	18	80	11	25	44	80	4	28	48	80
Potatoes—27 experiments...	3	18	6	27	1	17	9	27	...	16	11	27
† Selected experiments— Corn—24 experiments.	6	13	5	24	3	13	8	24	1	10	13	24
Potatoes—14 experiments...	.....	11	1	12	1	11	.....	12	...	9	3	12

Some of the conclusions to which these experiments lead may be briefly summarized thus:

As regards the influence of mineral ingredients:

* In several experiments (150 pounds) with 75 pounds Potash and 24 pounds Nitrogen respectively.

† The results of which, as shown by the reports, were not materially impaired by unfavorable weather, unevenness of soil or other circumstances.

1. The produce of corn was notably augmented by the potash often and by the phosphoric acid in the majority of the cases.

2. The produce of potatoes was notably increased by each (phosphoric acid and potash) in almost every case where the influence of the fertilizers was not obstructed by drouth, cold and other disturbing influences.

3. The produce of oats (in a smaller number of experiments) was apparently less increased by the potash than that of either corn or potatoes, while the phosphoric acid was usually beneficial.

As regards the influence of nitrogen :

4. The corn generally gave but little response to any nitrogenous materials, though in some cases it was materially helped by them. The potatoes and oats responded largely to the nitrogen in nearly every case where circumstances of climate and season permitted.

As regards the feeding capacity of the different plants, the results may be stated thus :

5. The corn seems (1) to respond largely to the mineral ingredients and (2) but little to the nitrogenous manures and (3) to possess in a very high degree the capacity for providing itself with nitrogen from natural sources.

6. Although botanically corn is closely related to wheat, oats and other cereals, it seems in its physiological relations to the ingredients of its food, to have more analogy with the legumes.

7. The potatoes were helped by each one of the fertilizing ingredients (superphosphate, potash salts and nitrogen compounds), in almost every case where climate and season allowed. But they gave but moderate yields with the mineral fertilizers, while responding largely to the nitrogen.

8. These experiments indicate decidedly that potatoes differ from corn, in that they have less capacity for gathering for themselves from natural sources sufficient quantities of nitrogen and other nutritive materials. They appear to demand a more ample provision by readily assimilable food close at hand. This difference between the potatoes and the corn may perhaps be explained, in part at least, by the differences in the root.

9. Oats (in a smaller number of experiments) were even more sensitive than the potatoes to the lack of immediately available nitrogen in the soil, and made relatively larger response to the nitrogen of fertilizers.

Prof. Atwater.—This subject of plants obtaining nitrogen directly from the atmosphere is one of my pet hobbies, and if you get me to running on it there is no telling when I may stop. As regards your question, however, whether corn obtains any considerable quantity of its nitrogen from the air or not, I must answer, very simply, "I don't know." I might guess that it does, but it would be only a guess. My belief is that some plants, such, for instance, as clover and peas, obtain a portion of their nitrogen directly from the air; but no man can say definitely what plants do obtain nitrogen in this way, and what plants do not, or how much of their nitrogen plants of any species thus acquire. The question of the acquisition of atmospheric nitrogen by plants is an old and much vexed one. The majority of chemists and vegetable physiologists have been, for years past, inclined to doubt whether any of our cultivated plants obtain any considerable quantity of nitrogen through their foliage from the air, though there is, even among many of those who hold this view, a feeling that we have much more to learn about the matter, and that many facts which we observe in the growth of plants are extremely difficult to explain, unless we allow that a considerable part of their nitrogen comes to them directly from the air. Some of you may have noticed in the *Country Gentleman* and in the *Philadelphia Times* a discussion of this matter between Sir John Lawes, of England, and myself.

The results of the famous experiments of Messrs. Lawes and Gilbert are apparently opposed to the belief in the atmospheric source of plant nitrogen. The same is true of the researches of Boussingault and other well-known investigators. While I have not regarded the results as conclusive, I have, until lately, been inclined to believe the balance of the evidence was very decidedly in favor of the common view. But some late experiments of my own, coupled with numerous European observations, have led me to a somewhat different opinion. Let me give you my own, perhaps partisan, view of the subject, and then attempt a fair and impartial answer to your question. Some time ago I undertook a series of experiments of a somewhat different kind from those which had been followed elsewhere, to find whether plants could, when a fair chance was given, gather any considerable quantity of nitrogen directly from the air. For this purpose peas were grown in sand, to which various substances containing the essential ingredients of

larger and smaller quantities of nitrogen. The quantities of nitrogen in the seed and in the solution at the beginning of the experiments were accurately determined by chemical analysis. The amounts in the plants at maturity and in the soil and the amount remaining behind in the sand were also determined. The plants were grown in the open air, but were protected from rain and dew.

If the plants should be found to contain, at the end of the experiment, more nitrogen than was supplied them in the nutritive solution and in the seed, we should be forced to conclude that the excess must have come from the atmosphere, since there was no other possible source. As a matter of fact I found a large excess of nitrogen, so large, indeed, that it very much surprised me, and though there was no apparent source of error in the experiments, yet I refrained from saying much about them until the next year, when I repeated the trials on a larger scale and obtained a still more striking gain of nitrogen. Every precaution was taken to insure the correctness of the results. In some cases, for special reasons, the arrangements were such as to prevent the normal growth of the plants. In these the gain of nitrogen was small, and in one or two cases there was an actual loss, which, however, can be easily explained, and indeed is explained, I think, by some further experiments which I hope soon to publish. But in every case where the plants had a fair chance the gain of nitrogen from the air was large.

In the cases in which the conditions of growth were most nearly normal, one-half of the whole nitrogen of the plants was acquired from the air. The plants contained two parts, by weight, of nitrogen, for every one supplied in nutritive solution and seed, and, what is still more remarkable, they did this not only when the amount of nitrogen was small, but when it was very much larger. Comparing the area of the pots in which the plants were grown with an acre, the pea plants acquired an amount of nitrogen from the air equivalent to twice the total nitrogen of a wheat crop of thirty bushels per acre and equal to that of a crop of three tons of clover hay.

So, then, the short of the story is, that these plants, peas, persisted in acquiring a considerable quantity of nitrogen in some way or other from the air, provided a part of what they needed was supplied to their roots. My own inference is, that other plants may be fairly assumed to have the same power that these peas had, and that probably such plants as clover, which are known to obtain nitrogen in a

remarkable way from natural sources, may get part of their supply from the air. The results of the field experiments with corn, of which I have told you, lead me to suspect that corn may be possessed of this property, though of course I can affirm nothing about it.

Such is my view. On the other hand, Messrs. Lawes and Gilbert are, or at least have been until lately, very firm in the conviction that plants in general are practically restricted to the soil as the source of their nitrogen.

They have, however, with the true scientific spirit, always refrained from positively affirming that this is the case, and some of the late writings of Sir John Lawes, which you may have seen, seem to me to imply that he is less strenuous on this point than he formerly has been.

In so far as I am able to separate myself from my own peculiar views, and to state fairly the actual condition of the question, it is about this: A large number of carefully conducted experiments in the green-house and in the field have made it appear extremely probable that the soil is the source of all but extremely small quantities of the nitrogen of plants, but there are numerous observations which imply that certain legumes especially can hardly obtain all of their nitrogen in this way, and the experiments which I have described to you imply that some plants at least, may in some way acquire nitrogen from the air. The question, however, demands further study.

A member.—Which is the cheapest source of nitrogen?

Prof. Atwater.—If by that you mean in what fertilizing material can nitrogen be had at the lowest cost per pound, I would refer you to Mr. Mapes here, who knows the fertilizer market as I do not. Mr. Mapes, what is the cheapest form?

Mr. Mapes.—I should say dried blood.

Prof. Atwater.—Mr. Mapes says that, in dollars and cents, dried blood is probably the cheapest form in which nitrogen could be bought, though from his tone I infer that there is very little difference between that and other common nitrogenous materials, as regards the cost of the nitrogen they contain.

Mr. Minch.—Taking nitrogen in the different forms—nitrate of soda, sulphate of ammonia, and dry blood—which is the best? Taking them pound for pound, which is the best?

Prof. Atwater.—You ask if a pound of nitrogen is worth more in one way than in another?

Mr. Minch.—Which is the cheapest ?

Prof. Atwater.—How is that, Dr. Cook ?

Prof. Cook.—I think they are about the same.

Prof. Atwater.—There seems to be a misunderstanding about the question. As I understand it, it is this—is the agricultural value more in one form than in another ?

Mr. Minch.—The question is this, “If a farmer buys one dollar’s worth of each, from which will he obtain the best results ?”

Prof. Atwater.—That depends upon how many pounds of nitrogen he gets in each for his dollar, and upon the relative values per pound for his use.

Mr. Minch.—We have a certain fixed value for each—for the ammonia in each. I ask what would be the average commercial value of one compared with the other. Taking the figures at which the different forms are sold, which would give the most value for the least money ?

Prof. Atwater.—Is there any such difference in the ruling rates in the different forms of this material ? Does a pound of nitrogen cost more in the one shape than in the other ?

Prof. Cook.—These prices vary all the time. It depends upon the purpose to which he wishes to put it.

Prof. Atwater.—The question, as I understand it, is, How can you best invest a dollar for nitrogen ? That involves two questions. How much nitrogen do you get ? and What is the relative agricultural value of the different forms ? As I understand the matter, the current rates at which fertilizers are now offered in New Jersey, are such as to make a pound of nitrogen cost about as much, say in dried blood or in sulphate of ammonia, as in nitrate of soda.

Prof. Cook.—There is very little difference between nitrogen in blood and nitrogen in nitrate of soda. The prices of nitrogen are very low—lower than they have been for twenty years.

Prof. Atwater.—Then a pound of nitrogen to-day costs about the same in each.

Prof. Cook.—Yes, sir.

Prof. Atwater.—Then suppose we get the same number of pounds for a dollar, which is of the most value ?

Prof. Cook.—The nitrate of soda is not so likely to be washed out of the soil.

Prof. Atwater.—Is that your understanding of it, Mr. Mapes ?

soil.

Prof. Atwater.—Mr. Mapes, I think, speaks very justly there, but at the same time I am not inclined to lay so much stress upon this washing out of the soil if the nitrate is applied when the plants are ready to use it and the soil is not very sandy.

If you want proof that nitrate of soda is worth the most, I can show you a long list of experiments which would go to show that such is the case. If you wish to establish that sulphate of ammonia or dried blood brings the best results, I can show you a long line of experiments which favor that view; and if you favor the idea that the three together are better still, I can give you still another long list of experiments which go to show this, too. [Laughter.] I don't know whether I have answered your question or not, sir. [Laughter.] Taking all in all, I am inclined to think that very much depends on soil and season. But as a rule I should prefer a mixture to any single ingredient.

A member.—Where can we get the cheapest supply of phosphoric acid?

Prof. Atwater.—That depends upon the man. [Laughter.] I don't know that this would have any influence on the value with you. So far as regards this, I will give you the testimony of Mr. Fairchild, a gentleman near Middletown, Conn., who has been studying this, with other questions, for a number of years, by a series of most accurate experiments. He has tried the experiment with potash and bone, side by side. Just before I came away I sent him a letter, asking him for the results of his experiments, and he wrote me about it.

The substance of it is this. He says: "I find that if I buy superphosphates I pay for my phosphoric acid some 10 cents a pound, or thereabouts."

A Member.—Nine cents.

Prof. Atwater.—"Whereas, in bone I can get it for about a half or two-thirds as much. I have made experiments for eight years, and the outcome of these is this, that, whether it be in the production of corn, or of potatoes, or of oats or wheat, a pound of phosphoric acid in the form of bone gives me just as much increase of crop as a pound in the form of phosphates. This is the result of these experiments."

From what I have observed I should say that for immediate action superphosphate would be best, unless the bone were extremely fine.

If you want something to last year after year, bone will give you for less money the same permanent effects.

Mr. Roberts.—In what form is the best bone; in what shape does it come?

Prof. Atwater.—Will Prof. Cook answer that question?

Prof. Cook.—The proper kind of bone is that got from the mill. It is ground bone. It is the rough bones ground up.

Mr. Carson.—Is a pound of soluble phosphoric acid from the rock worth as much as a pound from the bone?

Prof. Atwater.—I should say it would be, taking it in the long run. I answer as a theorist, however. I only know from experiments. I find conflicting results in these experiments at times. As the general outcome I should say, that for lasting effect there would be very little difference. For immediate effect, unless the bone was very fine, you would get better results—the best results, from the soluble phosphoric acid in the rock. What the effect would be if the bone was ground I cannot tell you. I don't believe very much, I don't believe there is a great deal of difference in the value of the two. Ask Dr. Cook or Mr. Mapes.

Mr. Carson.—I suppose he would say that fertilizer derived from the bone was worth more than that derived from the rock.

A Member.—What is the cheapest way to purchase potash?

Prof. Atwater.—The cheapest form is the muriate. The best form depends upon circumstances. If you want the largest amount for a dollar, you had better get the muriate than any other form.

A Member.—Is there a great deal of potash in kainit?

Prof. Atwater.—In kainit you have about twelve or thirteen per cent. of potash, and, with its compounds of magnesia and common salt, sometimes these latter may add very materially to its value.

Mr. Denise.—There are several other matters which ought to be brought up.

I move that the several papers be referred to the Executive Committee, to be prepared by them for publication in our proceedings, or such parts of them as they may submit.

Mr. Rogers.—I would now move you that a vote of thanks be tendered Prof. Atwater for his very entertaining and instructive lecture.

Unanimously carried.

FOOD EQUIVALENTS.

BY SIR J. B. LAWES, BART., LL.D., F.R.S.

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Two years ago the British Parliament passed an act by which tenant farmers were entitled to receive compensation for unexhausted manures on leaving their farms. Before, however, the claim could be established it was necessary for them to satisfy arbitrators or judges that such manures not only existed in the soil, but also that they possessed the value claimed for them. Of the claims made, so far as my experience has gone, the result has been by no means satisfactory to the tenants, and an opinion generally prevails that the benefits to be derived from the act are very much less than what was anticipated when it was passed.

The science of Agriculture will have to pass through several generations of progress before it will be in a position to pronounce with any certainty as to the locality and the value of the various substances applied in manures to the soil. The fond belief which once prevailed, that if the manures applied were not taken up by the crops they must still exist in the soil, has been rudely disturbed by the discovery of nitrification. That the annual amount of organic matter nitrified each year is more or less a measure of the soil's fertility would appear to come under the head of a general law. It cannot be an accidental circumstance that all the cereal crops grown with mineral manures on my land have declined in yield, more especially when analyses of the soil have proved with certainty that its organic nitrogen has also largely declined. Nor would the fact that mineral manures in certain localities have produced largely increased crops be sufficient to disturb the above conclusion, as their application may have had the effect of inducing more active nitrification.

It is true that the experiments on corn which have been tried in the States do not give much encouragement to the idea that this magnifi-

cent cereal feeds in a similar manner to that of its more humble brethren; still, I should require more careful and longer extended experiments to satisfy me that plants of the same natural order had different modes of taking their food from the soil.

While nitric acid has no permanent resting place in a soil, and ammonia is rapidly converted into nitric acid, organic nitrogen—or, in other words, nitrogen in combination with carbon—has a durability which may be measured by days or by centuries. It is the uncertain degrees of durability in the manures from cattle foods which are employed by the British farmer that, on the one hand give him an equitable, as well as a legal claim for compensation, but on the other hand place serious obstacles in his way when he attempts to enforce his claim. It was with the hope of rendering some assistance to the farmer that we recently wrote a paper on this subject, and although the subject generally has only a local interest, still there are some parts which may, I hope, possess a certain interest to the farmers of the United States.

It must be evident that whenever a food is consumed by stock a certain portion of it must be retained by the animal, and that this portion will vary with the composition of the food. It was therefore necessary to construct a table to show, first, the chemical composition of the various foods in use; secondly, their feeding properties, and the amount of ingredients which the animals consuming these foods were likely to retain in their system; while the third part of the table gave the amount of manure ingredients which might be expected to pass through the animal, and on these we place a value calculated from the prices at which they could be purchased in the form of artificial manures. The table referred to will be found on pages 116 and 117.

It is quite obvious that in the construction of a table of this description we lay ourselves open to criticism of various kinds. The chemist may call the figures in question as not being in accordance with the chemical composition of the foods; while the practical farmer may say that he knows much better than we do that such results cannot be obtained in his feeding sheds. To one and the other we can give but one and the same answer, which is to this effect: that we know ourselves—perhaps better than they do—the imperfections which are to be found in the table, but that its construction is the result of the best data at our command, and that as knowledge and experience advance the various items can be corrected and amended.

In making use of food equivalents, or in other words in selecting from the table the number of any of the foods required to produce one pound of increase, it is necessary to understand that the results can only be obtained by a judicious use of the various foods. An ox could not be kept alive on linseed alone, and if fed upon straw alone a ton of this substance would be more likely to produce no increase than the amount of pounds given in the table. Therefore now to give a few illustrations of increase upon foods, to show how the figures are applicable to the ordinary practice of farming.

Many years ago we conducted a series of experiments upon various breeds of sheep, thirty of each breed being in most cases selected, and the system of feeding was such as any ordinary farmer would employ when fattening his sheep for market. For each experiment the foods were carefully weighed, and a fixed amount of cake, or meal and hay, was supplied, but the animals were allowed to eat as many Swedish turnips as they liked. The following table gives the amount of food consumed by each breed of sheep to produce 100 lbs. increase in their live weight, as given in the table published in 1861, and also the amount of increase which the same amount of food should give, if calculated according to the present table :

DESCRIPTION OF SHEEP.	FOOD CONSUMED TO PRODUCE 100 LBS. INCREASED LIVE WEIGHT.			INCREASE WHICH THE SAME SHOULD HAVE PRO- DUCED IF CALCULATED BY TABLE OF FOOD EQUIVA- LENTS
	Oil cake lbs.	Hay chaff lbs.	Swill lbs.	
Hampshire Downs...	292	281	3,967	102
Sussex Downs.....	297	255	3,536	103
Cotswold	254	217	3,555	59½
Leicester.....	264	251	3,761	95½
Cross Bred Wethers .	264	252	3,725	96
Cross Bred Ewes.....	264	250	3,671	94½
				Mean..... 96½

Taking the mean of the six breeds, we find that the food, which under experiment actually produced 100 lbs. of increase on the aver-

TABLE I.—SHOWING THE DATA, THE METHOD, AND THE RESULTS, OF THE ESTIMATION

Numbers.	DESCRIPTION OF FOOD.	Fattening Increase in Live Weight. (Oxen or Sheep)		NITROGEN.							
				In Food.		In Fattening Increase (at 1.27 Per Cent.)		In Manure.			
		Food to One In- crease.	Increase per Ton of Food.	Per Cent.	Per Ton.	From One Ton of Food.	Per Cent. of Total Consumed.	Total Remaining for Manure.	Nitrogen Equal Ammonia.	Value of Ammo- nia at 6d. per lb.	
		lbs.	per c't.	lbs.	lbs.	per c't.	lbs.	lbs.	lbs.	¢ ¢ ¢	
1	Linseed	5.0	418.0	3.80	80.64	5.69	7.08	74.95	81.0	2 5 6	
2	Linseed cake	6.0	373.3	4.75	106.40	4.74	4.45	101.66	123.4	3 1 8	
3	{Decorticated cotton cake...}	6.5	344.6	6.60	147.84	4.38	2.96	143.46	174.2	4 7 1	
4	Palm-nut cake.....	7.0	320.0	2.50	56.00	4.06	7.25	51.94	63.1	1 11 7	
5	{Undecorticated cotton cake...}	8.0	280.0	3.75	84.00	3.56	4.24	80.44	97.7	2 8 10	
6	Cocoa-nut cake.....	8.0	280.0	3.40	76.16	3.56	4.67	72.60	88.2	2 4 1	
7	Rape-cake.....	(10)	(224)	4.90	103.76	2.84	2.59	106.92	129.4	3 4 11	
8	Peas.....	7.0	320.0	3.60	80.64	4.06	5.03	76.58	93.0	2 6 6	
9	Beans.....	7.0	320.0	4.00	89.60	4.06	4.53	85.54	103.9	2 11 11	
10	Lentils.....	7.0	320.0	4.20	94.08	4.06	4.32	90.02	109.3	2 14 8	
11	Tares (seed).....	7.0	320.0	4.20	94.08	4.06	4.32	90.02	109.3	2 14 8	
12	Indian corn.....	7.2	311.1	1.70	38.08	3.95	10.37	34.13	41.4	1 0 9	
13	Wheat.....	7.2	311.1	1.80	40.32	3.95	9.80	36.37	44.2	1 2 1	
14	Malt.....	7.0	320.0	1.70	38.08	4.06	10.66	34.02	41.3	1 0 9	
15	Barley.....	7.2	311.1	1.65	36.96	3.95	10.69	33.01	40.1	1 0 1	
16	Oats.....	7.5	298.7	2.00	44.80	3.79	8.46	41.01	49.8	1 4 11	
17	Rice meal.....	7.5	298.7	1.90	42.56	3.79	8.91	38.77	47.1	1 3 6	
18	Locust beans.....	9.0	248.9	1.20	26.88	3.16	11.76	23.72	28.8	0 14 5	
19	Malt coombs.....	8.0	280.0	3.90	87.36	3.56	4.08	83.80	101.8	2 10 11	
20	Fine pollard.....	7.5	298.7	2.45	54.88	3.79	6.91	51.09	62.0	1 11 0	
21	Coarse pollard.....	8.0	280.0	2.50	56.00	3.56	6.35	52.44	63.7	1 11 10	
22	Bran.....	9.0	248.9	2.50	56.00	3.16	5.64	52.84	64.2	1 12 1	
23	Clover hay.....	14.0	160.0	2.40	53.76	2.03	3.78	51.73	63.8	1 11 5	
24	Meadow hay.....	15.0	149.3	1.50	33.60	1.90	5.65	31.70	35.5	0 19 3	
25	Pea straw.....	16.0	140.0	1.00	22.40	1.78	7.95	20.62	25.0	0 12 6	
26	Oat straw.....	18.0	124.4	0.50	11.20	1.58	14.11	9.62	11.7	0 5 10	
27	Wheat straw.....	21.0	106.7	0.45	10.08	1.36	13.49	8.72	10.6	0 5 4	
28	Barley straw.....	23.0	97.4	0.40	8.96	1.24	13.84	7.72	9.4	0 4 8	
29	Bean straw.....	22.0	101.8	0.90	20.16	1.29	6.39	18.87	22.9	0 11 6	
30	Potatoes.....	60.0	37.3	0.25	5.60	0.47	8.39	5.13	6.2	0 3 1	
31	Carrots.....	85.7	26.1	0.20	4.48	0.33	7.37	4.15	5.0	0 2 6	
32	Parsnips.....	75.0	29.9	0.22	4.93	0.38	7.71	4.55	5.5	0 2 9	
33	Swedish turnips.....	109.1	20.5	0.25	5.60	0.28	4.64	5.34	6.5	0 3 3	
34	Mangel wurzels.....	96.0	23.3	0.22	4.93	0.30	6.09	4.63	5.8	0 2 10	
35	Yellow turnips.....	133.3	18.8	0.20	4.48	0.31	4.69	4.27	5.2	0 2 4	
36	White turnips.....	150.0	14.9	0.18	4.03	0.19	4.71	3.84	4.7	0 2 7	

PHOSPHORIC ACID.						POTASH.										Total Original Manure Value per Ton of Food Consumed.
In Food.		In Fattening Increase (at 0.8% Per C't.)		In Manure.		In Food.		In Fattening Increase (at 0.11 Per C't.)		In Manure.						
Per Cent.	Per Ton.	From One Ton of Food.	Per Cent. of Total consumed.	Total Remaining for Manure.	Value at 3d. per lb.	Per Cent.	Per Ton.	From One Ton of Food.	Per Cent. of Total Consumed.	Total Remaining for Manure.	Value at 2½d. per lb					
per c't.	lbs.	lbs.	per c't.	lbs.	s. d.	per c't.	lbs.	lbs.	per c't.	lbs.	s. d.					
1.54	34.00	3.85	11.16	30.65	7 8	1.37	30.69	0.49	1.60	30.20	6 3					
2.00	44.80	3.21	7.17	41.59	10 5	1.40	31.36	0.41	1.31	30.95	6 5					
3.10	68.44	2.96	4.26	66.48	16 8	2.00	44.80	0.38	0.85	44.42	9 3					
1.20	26.88	2.75	10.23	24.13	6 0	0.50	11.20	0.35	3.13	10.85	2 3					
2.00	44.80	2.41	5.38	42.39	10 7	2.00	44.80	0.31	0.69	44.49	5 11					
1.40	31.36	2.41	7.63	28.95	7 3	2.00	44.80	0.31	0.69	44.49	9 3					
2.50	56.00	1.93	3.45	54.07	13 6	1.60	33.60	0.25	0.74	33.35	6 11					
0.85	19.04	2.75	14.44	16.29	4 1	0.96	21.50	0.35	1.63	21.15	4 5					
1.10	24.64	2.75	11.16	21.89	5 6	1.30	29.12	0.35	1.20	28.77	6 0					
0.75	16.80	2.75	16.37	14.05	3 6	0.70	15.68	0.35	2.23	15.33	3 2					
0.80	17.92	2.75	15.35	15.17	3 9	0.80	17.92	0.35	1.95	17.57	3 8					
0.60	13.44	2.68	19.94	10.76	2 8	0.37	8.29	0.34	4.10	7.95	1 8					
0.85	19.04	2.68	14.68	16.39	4 1	0.53	11.87	0.34	2.86	11.53	2 5					
0.90	17.92	2.75	15.35	15.17	3 9	0.50	11.20	0.35	3.13	10.85	2 3					
0.75	16.80	2.68	15.95	14.12	3 6	0.55	12.32	0.34	2.76	11.98	2 6					
0.60	13.44	2.57	19.12	10.87	2 8	0.50	11.20	0.33	2.94	10.87	2 3					
(0.60)	(13.44)	2.57	(19.12)	(10.87)	(2 8)	(0.37)	(8.29)	0.33	(4.00)	(7.96)	(1 8)					
.....	.....	2.14	.....	.....	.....	.....	.....	0.27	.....	.....	.....		
2.00	44.80	2.41	5.38	42.39	10 7	2.00	44.80	0.31	0.69	44.49	9 3					
2.90	64.96	2.57	3.96	62.39	15 7	1.45	32.70	0.33	1.01	32.37	8 9					
3.50	78.40	2.41	3.07	75.99	19 0	1.50	33.60	0.31	0.92	33.29	6 11					
3.60	80.64	2.14	2.65	78.50	19 8	1.45	32.48	0.27	0.83	32.21	6 8					
0.57	12.77	1.38	10.81	11.39	2 10	1.50	33.60	0.18	0.54	33.42	7 0					
0.40	8.96	1.28	14.28	7.68	1 11	1.60	35.84	0.16	0.45	35.68	7 5					
0.35	7.84	1.20	15.31	6.64	1 8	1.00	22.40	0.15	0.67	22.25	4 8					
0.24	5.38	1.07	19.89	4.31	1 1	1.00	22.40	0.14	0.63	22.26	4 8					
0.24	5.33	0.92	17.10	4.46	1 1	0.80	17.92	0.12	0.67	17.80	3 8					
0.18	4.03	0.84	20.84	3.19	0 9	1.00	22.40	0.11	0.49	22.29	4 8					
0.30	6.72	0.88	13.10	5.84	1 5	1.00	22.40	0.11	0.49	22.29	4 8					
0.15	3.36	0.32	9.52	3.04	0 9	0.55	12.32	0.04	0.32	12.28	2 7					
0.09	2.02	0.22	10.89	1.80	0 5	0.28	6.27	0.03	0.48	6.24	1 4					
0.19	4.26	0.26	6.10	4.00	1 0	0.36	8.06	0.03	0.37	8.03	1 8					
0.06	1.34	0.18	13.43	1.16	0 4	0.22	4.93	0.02	0.41	4.91	1 0					
0.07	1.57	0.20	12.74	1.37	0 4	0.40	8.96	0.03	0.34	8.93	1 10					
(0.00)	(1.34)	0.14	10.78	1.20	0 4	(0.22)	(4.93)	0.02	0.34	4.91	1 0					
0.05	1.12	0.13	11.61	0.99	0 3	0.30	6.72	0.02	0.30	6.70	1 5					

age, produced only 96½ lbs., or 3½ less than 100 lbs. if calculated according to the table of food equivalents. It will be seen that the Sussex sheep—which are celebrated for producing a very high quality of mutton—required more food to produce their increase actually, and also if calculated by the food equivalents; while the Cotswold sheep—which are noted as a breed that fattens very rapidly, but produces a lower quality of mutton—consumed much less than the calculated equivalent of food.

As all these animals were selected with care for experimental purposes and were fed under cover, we might have anticipated that they would consume rather less food than sheep fed under ordinary circumstances.

As an example of feeding with oxen, I will take some experiments which I have recently published where silage made from red clover was compared with Swedish turnips and clover hay. The results are given in the following table.

Table giving the consumption of five oxen, fed for 114 days with linseed cake, barley meal and clover silage; and five oxen, fed with linseed cake, barley meal, sweets and clover hay:

	Cake, lbs.	Meal, lbs.	Hay, lbs.	Sweets, lbs.	Silage, lbs.	Actual increase, lbs.
5 oxen....	3,420	2,565	6,840	25,200	.....	1,474
5 oxen.....	3,420	2,565	.....	.....	38,080	1,547

According to the calculated increase from the foods consumed, as given in our table; the results should have been as follows:

	Lbs. increase.
Cake.....	530
Meal.....	355
Hay.....	455
Roots.....	258
Total.....	1,681

The real increase was 157 lbs. less than this. We have not made any attempt to calculate the food equivalent of silage. In this experiment, where the silage was very good, being made from pure red clover, it took about 61 lbs. to give 1 lb. increase of live weight, assuming that we allow the cake and meal to yield an increase in accordance with the calculated equivalents in our tables.

It may here be observed that in these experiments a considerable portion of uneaten food was weighed off each day. I am disposed,

as much as might have been expected, from the calculated equivalent of the food consumed, is due to the fact that they received too large an amount of cake and meal; $10\frac{1}{2}$ lbs. per day is probably rather more than can be used economically, unless when given quite at the end of the fattening period.

A short time ago, Mr. Morton Frewen furnished some particulars of the fattening of oxen, at Superior, Wisconsin, in cold-proof buildings, where 4,000 head are fed at one time. The following are the quantities of food which he states are consumed in fattening an ox:

	Pounds.	Calculated increase.
Maize...	1,500	210
Oats.....	450	60
Linseed.....	168	33
Bran	450	50
Wheat screenings.....	600	41
Hay	1,500	100
		<hr/> 494

With regard to the wheat screenings, I have nothing to guide me as to their good properties except the price, which Mr. Morton Frewen gives as $\frac{1}{4}$ cent per lb.; this would be equal to \$5 per ton, while bran is valued by him at \$9 per ton. I have, therefore, calculated the food value in proportion to the difference in price. With regard to the increase in the oxen, Mr. Morton Frewen informs us that the lean oxen weigh 1,100 lbs., while when fat at Liverpool they will weigh 1,450 lbs., 100 lbs. having been lost in the transit, from shrinkage. The actual increase upon the food would therefore be 450 lbs., the calculated increase being 494 lbs. It is not probable that on these occasions the food is very accurately weighed; nor is it probable that the hay used would be equal in quality to the hay we have in England.

The examples given are sufficient to show that a good many precautions must be observed in order to obtain the best results from any food, or rather from any mixture of foods. When combined in the most suitable proportions, it is probable that the increase might be fully equal to that given in the table; but wherever the food was of too high or too low a quality, less favorable results would be obtained. In one case food is voided without being digested, and in the other the increase in the animal is too slow, while too much food is consumed in its mere sustenance.

The capacity of increase in an animal, as well as the cost of food in any locality, are matters of great importance. The rate of increase in oxen is less than in sheep, and in both it is considerably lower than it is in pigs.

In the States corn, as a rule, is relatively cheaper in proportion to fat stock than it is in England, and in consequence it can be used more liberally. Surprise is often expressed at the much higher prices which English farmers pay for linseed and cotton cake, as compared with corn; but the reason is to be found in the much higher manure value of the cakes. I have often wondered at the high prices which the United States farmer appears willing to pay for nitrogen in artificial manures, when he might obtain these manures at a much lower cost by simply feeding cotton seed and cotton cake.

Although the farmer's legal right to obtain compensation for the unexhausted residue of his manures gives to the subject in England an importance which it does not possess in the States, still a few of the leading facts upon which the principle of compensation is based may not be without interest. There is a good deal of land cultivated in Great Britain which is too poor to grow profitable crops without artificial fertility being imported on to the farm, even when it is only the grain of two years out of four that is sold off the farm, while the straw of the grain crops with the turnips and clover are consumed on the farm.

This fertility very often consists of linseed, and cotton seed cakes. The nitrogen contained in these goods—with the exception of the small amount retained by the animal—passes into the excrements in the form of organic compounds of nitrogen. These compounds vitrify in the soil with very different degrees of rapidity. A certain portion of those found in the urine vitrify very readily, while some of those in the solid excrements may remain for several years in the soil.

Experience has shown that when these foods are used upon a poor soil for the first time, their effect is not at first equal to what it becomes later on, when they have been in use for a few years. This is due to the slow decay of some of the compounds. A crop grown by the eighth application of cake may be in part grown by small portions of the cake used in each of the previous seven applications. The ultimate decay of organic substances in the soil must depend therefore upon a great variety of circumstances, and our own experiments at

Some manures cease to produce an effect upon the
they have been applied.

which we assumed in our calculation as that when all
old cease was eight years after the application, but this
bitrary figure, and not in any way based upon direct
evidence which we do possess, which bears upon
of organic compounds in the soil, is to the effect
e is applied every year to grow barley—although
nitrogen it contains it increases the crop nearly as
lent amount of nitrogen applied in the form of
nitrate of soda—it leaves a residue of nitrogen
the course of time, accumulates sufficiently to be
sis, while no such accumulation is shown by

also leaves a residue, which is exceedingly difficult
l straw, which constitutes the larger portion of
decomposed in the soil.

manures such as salts of ammonia or nitrates,
ate in the soil, may still be indirectly the means
ic compounds there, as, when applied to cereal
rease the straw, and this straw is, in its turn,
Nitric acid, which itself is not an organic
nning and end of an innumerable series of
which those under the soil are probably the

act to which agricultural science must now be
manures has occupied a large portion of our
on. The soil must be the work of those who
in the next generation.

EXPERIMENTS WITH POTATOES.

BY N. W. PARCELL, OF ELIZABETH, UNION COUNTY.

EXPERIMENTS WITH POTATOES.

TO TEST THE QUALITY, TIME OF RIPENING, PRODUCTIVENESS, AND
ALSO THE BEST TO GROW FOR MARKET IN HIS LOCALITY.

BY N. W. PARCELL, OF ELIZABETH, UNION COUNTY.

The soil on which the potatoes were grown is, I think, more fertile than the average of farm lands. It is also heavy, with clay subsoil, and is underlaid, about three feet from the surface, with shale, and so situated that with ordinary rains the water soon runs off. It had been in meadow eight years previous to the month of June, 1884, when it was plowed and 600 pounds of slug dust from the Elizabeth Glue Works, and 300 pounds of sulphate of potash sown broadcast per acre and harrowed in, and sowed with turnips in drills. In April, 1885, the ground was plowed as deep as it could be, without turning up the subsoil, and I thought it was in good condition to grow a crop of potatoes, as the old sod had rotted sufficiently, so that they would get the benefit of it. The following compost, composed of 600 pounds of bone-dust, 300 pounds of muriate of potash, two tons of stable manure, and two tons of earth, mixed together under cover and turned until it ceased to heat. This was applied broadcast per acre, and harrowed in. The rows were marked out with a Darnell marker, three feet apart, and five inches in depth. The seed pieces were cut from smooth, medium-sized potatoes, one eye on a piece, rolled in plaster, and dropped fifteen inches apart in the row, with the exception of the early Ohio, which were cut two eyes on a piece and dropped twelve inches apart. They were then covered with two inches of earth and Forrester's potato manure spread about one foot in width on the row, at the rate of 1,200 pounds per acre, and covered with a plow on April 28th. May 11th the Thomas harrow was run over them lengthwise, so that the ridges were nearly level with the surface of the ground.

As soon as the potatoes could be seen in the row, they were plowed with a cabbage plow, from the row, as close as possible and deep; then they were immediately plowed to the row, to prevent the roots of the potato from being exposed to the air and sun. From that time the cultivator was run between the rows once a week until the first of July, when they were hoed by hand, and hilled with a moulding plow. The vines were Paris-greened twice. There were two rows 300 feet in length of each variety. In digging, there was 100 feet in length, measured in the middle of one row of each variety. The potatoes were dug and left to dry, so that no dirt would stick to them. They were then weighed and the calculation made what the yield would have been per acre in bushels, counting sixty pounds to the bushel (provided there had been an acre of each variety), with the following results. In the outside columns I give, for comparison, the time of ripening and yield of 1884, all the varieties embraced in the trial of 1885, with the exception of Late Rose and Clark's No. 1, which were not weighed or measured in 1884. I do not think, however, that the yield of either was more than 150 bushels per acre, and the quality was poor:

	1885.		1884.	
	Time of ripening.	Yield in bushels.	Time of ripening	Yield in bushels.
	Days.		Days.	
Early Ohio.....	112	242	104	290
Early Vermont.....	120	305	110	225
Beauty of Hebron	120	421	110	201
Watson's Seedling.....	120	413	115	249
Lee's Favorite.....	120	295	115	469
Rosy Morn.....	120	316	120	532
Early Rose.....	126	378	120	325
Queen of the Valley.....	130	379	120	356
American Magnum Bonum.....	130	280	124	261
Vermont Champion.....	132	542	122	456
Mammoth Pearl.....	132	488	122	401
Burbank.....	132	488	122	323
White Star.....	132	355	122	291
White Elephant.....	132	321	122	271
St. Patrick.....	132	454	122	292
O. K. Prolific.....	132	343	122	251
Late Rose.....	132	520	.....	.....
Clark's No. 1.....	132	405	.....	.....

The fractional parts of a bushel I have omitted, as I thought they would be of no practical value. There were few small potatoes in any of the varieties and they were all very smooth and free from scab.

The quality for eating was excellent for their kind. My mind has not changed as to quality of the different varieties from last year 1884. Beauty of Hebron stands first; Early Vermont and Watson's Seedling, second; Early Rose, Rosy Morn and Lee's Favorite. Early Ohio, Queen of the Valley, Burbank and White Star

Vermont Champion, Mammoth Pearl, White Elephant, St. Patrick, Magnum Bonum and O. K. Prolific, fifth. I will here state that the table qualities of Late Rose and Clark's No. 1, last year, 1885, were excellent. I will also state that the yield of Early Rose, adjoining the experiment plot, where the soil was not so deep and fertile, with ten two-horse loads of rotted stable manure per acre, and one-half of the piece manured with Forrester's Potato Manure, and the other half with E. Frank Coe's Excelsior Guano, at the rate of 800 pounds to the acre in addition to the stable manure—the manures applied, the potatoes cut, dropped and covered, and the cultivation done in the same manner as before mentioned in the above plot—was 225 bushels per acre, by estimation. I stated last year that I did not think much information could be obtained from a trial of one year as to the productiveness of the different varieties of potatoes, or that one could tell which of the early kinds would be the earliest. I am now satisfied that the Early Ohio is the earliest potato that I have grown. Of the other early kinds I do not know, and it can make little difference as the time of ripening is so nearly the same.

What can be said about the productiveness? One year some one of the early varieties will be the most productive and another the least; the next year the variety that was the least will be the most productive; and it is the same with the late varieties. What is the cause and the remedy? I think the cause is in the soil, and in the climatic changes of the seasons. The remedy I do not know.

For market I find none better than the Early Rose. In my trials of several years it has not been up to the average, but has been more uniform in yield; is good in quality, and it has a better name than any other variety and will bring a better price.

Finally, I think the cooking qualities of New Jersey potatoes are not excelled by those grown in any other State in the Union.

SHEEP HUSBANDRY.

BY JEREMIAH M'CAIN, OF MOUNT HERMON, N. J.

SHEEP HUSBANDRY.

BY JEREMIAH M'CAIN, OF MOUNT HERMON, N. J.

GENTLEMEN—By your request I will, in a brief way, make a few statements in regard to sheep husbandry from my own personal experience, and to show how we have improved sheep and how we have gained in size, quality, and early maturity. We now get them at two years old almost fully developed.

To illustrate and make things plain, I will go back to 1839.

The only sheep, then, of improved breeds that I could hear of in our State were near Clinton, in Hunterdon county. They had been imported as a foundation for building up a flock of Bakewells, they having been imported direct from Mr. Bakewell, of England.

My brother and I commenced farming in 1839, each finding his own stock, but the grain we raised was in partnership.

I heard of those sheep and I wanted my brother to go in company with me and get three—two ewes and a ram—and we could start a flock; but he refused. Well, I went, against all kinds of opposition, and got the three; and on my return with them many came to see them, and all pronounced them very fine. When I told them the price I gave—\$10 each, then they were astonished; but the following year showed old and young farmers something new. I sold a part of my lambs, then half-breeds, for \$5 each to farmers as breeders. After selling those, a butcher came to buy of us both; he gave brother \$1.25 per head for his and \$2.50 for mine, and that settled things and showed the difference between common and improved stock, and they have steadily improved ever since.

Soon after that the Southdowns were imported and gave notoriety, but for some reason for a time they were slow of sale, till Mr. J. C. Taylor, of Holmdel, Monmouth county, N. J., commenced importing Southdowns. About 1855 he commenced by selecting from the

famous flocks of Mr. Jonas Webb, of Babraham, England. He then, with the advice and assistance of Col. Lewis G. Morris, of Fordham, N. Y., soon gave them credit, and they became in great demand; and when Mr. Taylor imported "World's Prize" and exhibited him at our State fair, and Mr. George Hartshorn imported "Young York" to beat "Prize," then they went in for improvement, and Mr. Taylor coming off victorious, this gave him plenty of customers at large prices, and he at once imported "Reserve" and several ewes. In 1860 and 1861, at the great closing-out sale of 967 head of Southdowns of Mr. Jonas Webb, Mr. Taylor put in his order to buy "No. 89" without limit to price. He was bid up to \$1,300 and struck off to Mr. Taylor's bid; and he bought two other rams and, I think, ten ewes at the same sale. I then purchased four Southdown ewes of Mr. Hartshorne in 1861; they were sired by "Young York" and out of imported ewes, and I took those ewes down to Mr. Taylor's rams and gave him \$10 each to be served by them, and I raised six lambs from them, and so I established my flock of Southdowns. And in 1863 I went to Canada and bought six ewes and a ram of Cotswolds, all very large and fine in quality. The ram clipped thirteen pounds of washed wool and the ewes nine and a half pounds each, and I sold the wool at 90 cents per pound. From those I made up my flock of Cotswolds, and from that time we have been importing and breeding with grand success.

In 1876 there was a large number imported of the various breeds of sheep, and to-day we represent nearly all the different breeds of large, fine and profitable sheep for our State, or any other State.

We now have the Southdowns, Oxford Downs, Hampshire Downs, Shropshires, and Cotswolds, all large, finely-formed sheep and good shearers; then we have the Merinos, or wool producers; they have no equals, as we have steadily improved our sheep in breeding. Our State has good reason to be proud of its sheep husbandry.

The climate and healthfulness of our State, as compared with other States, have no equal; no contagious diseases are known here; sheep that are diseased in other States, in some places to an alarming extent, with scab and hoof ail, when brought here will become sound and healthy in Northern New Jersey, in our healthy climate.

Now comes the inquiry as to which is the most profitable or best breed. This depends very much upon what they are intended for—whether for wool and heavy sheep at maturity, or for raising market lambs.

a pair to three months old, at \$8 to \$11 each. They have been selling for a few years readily at that, and why so few adopt the plan of raising them remains a mystery to me, as it requires no extra outlay to establish the business.

Mr. Devaney, who superintends Hon. H. C. Kelsey's interests on his Red Gate farm, in Sussex county, selects strong ewes of western grades, and uses Oxfords or Hampshire rams, and I think he told me he got \$11 per head for ninety or more of his crop of lambs, and an advance on the ewes he bred from.

A few others are now adopting the same plan and many more might. Many will be very cautious in selecting a good lot of ewes to breed from, and then take a very inferior ram to mate with them, and by so doing save three or four dollars, and lose at least one dollar on every lamb; for we know a ram has at least two-thirds of the influence on the increase.

Some people claim that sheep eat too close to the ground. If they have a supply of feed they are no harder on land than cattle, or any other farm stock. While most farmers compel their sheep to eat close or starve, others give the sheep the first feed and the cattle after them.

This reverse shows the difference; the manure from sheep has three times the influence on crops that barnyard manure has.

One great advantage in sheep is the little cost in the care of them. Any ordinary hand can do that during the season they run on pasture. No extra time need be lost in caring for them. Cows need much attention, and much expensive labor must be added to them, and they stand dry, many of them a long time, with no income whatever, while sheep are having a daily growth of wool to add to their profits, and ewes, after raising their lambs, will, with proper care, sell in market at an advance of 20 per cent. on first cost.

Wool, early in 1885, sold low, but has improved in price, and is now in good demand, and advancing in price.

Many are forcing their sheep on the market, and by so doing have kept the market crowded during the past year, at very low prices, and many will be losers by so doing.

My own experience in sheep husbandry is this: I have always kept one rule good, and that has been my success—to keep nothing of any breed but the best of its kind, for nothing inferior has much profit in it at any time.

The healthfulness of our State for sheep leaves no room for a veterinary surgeon to look after them for profit.

One thing, I think, we all lack in, is by not raising more roots of the different kinds for our sheep for winter feeding.

No one need keep poor sheep in New Jersey now, and if he does it is his own fault, when he can now obtain any of the different breeds if he chooses, at fair prices.

Much more might be added, but I close for this time.

HOG CHOLERA.

BY S. LOCKWOOD, D.V.S., OF WOODBRIDGE, N. J.

HOG CHOLERA.

BY S. LOCKWOOD, D.V.S., OF WOODBRIDGE, N. J.

For several years past a peculiar and very destructive disease known as hog cholera has appeared in various parts of the United States, and for the last two years has become very prevalent in New Jersey. The Legislatures of several States have appointed committees to investigate as to its cause and treatment, with a view to its arrest, and from their reports as well as private information we are enabled to form a very clear idea of several forms of the disease.

The name "hog cholera" is not well chosen, as it often conveys an erroneous impression of the disease, for it has little of the nature of cholera about it except its epizootic character.

Various causes have been given by different writers, all of which may be summed up in improper or unwholesome food, drink and surroundings, but by careful observations we find those that are kept on high, dry, clean pastures and those kept in close, filthy pens are alike attacked with this disease. We are therefore forced to believe the cause is due to some atmospheric germ that is poison to the swine race, causing a more or less rapid dissolution of blood and disorganization of tissue.

The symptoms are not always the same, but are varied by the mode of its localization upon the different organs.

The more early symptoms are : the eyes look dull and deep set in the head and the inner corner is gummed up ; the animal seems dull and weak ; he does not run to his feed, as usual, but comes slowly or not at all, eats but little, lies down most of the time, and tries to bury his head in the litter. These mild symptoms may continue for a day or more, when the disease presents a train of symptoms which are varied according to its localization.

If it be upon the brain with intensity the pig may give a sudden squeal, fall in convulsions and die in a few minutes.

If it be the spine, then the pig will get upon its front feet and only by the greatest exertion can it get upon its hind feet, if at all.

If it be the throat, the neck and ears swell, small ulcers appear on the lips, and in hogs of light color red patches appear on the skin, first about the parts most affected, later over the greater part of the body, gradually becoming of a bluish-black color. This discoloration of the skin is likely to be visible in all the advanced stages of the disease.

If it be the lungs, the breathing will be difficult, with a wheezy, laborious cough, with frothy saliva dribbling from the mouth.

If it be the kidneys, the more prominent symptoms are very similar to those where the spine is the seat of disease, except there is not the total loss of power.

If it be the bowels, the back is arched, the animal is drawn with intense pain and the abdomen is very tender; the bowels usually are at first costive, followed in the more advanced stages by frequent loose offensive discharges. In fatal cases the heaving of the flanks increases, a frothy matter runs from the mouth and nose, accompanied by vomiting and increasingly offensive discharges from the bowels, and death soon follows.

The duration of the disease is unlimited; the weather, surroundings, care and treatment all have their influence, and animals may recover in one or six weeks or may die in one day or in one month.

Treatment: The medicine for the earlier symptoms is belladonna, tinct., 10 drops three times a day in a little sweet milk, or, if the pig will not eat, the medicine may be mixed in a spoon with a little milk or water and put upon the tongue.

As the disease advances, if it attacks the brain, give belladonna or gelseminum.

If the throat, give belladonna or mercurius.

If the lungs, give aconite and phosphorus, alternately.

If the bowels, give aconite and arsenicum, alternately.

If the spine, give belladonna and nux vomica or belladonna and rhus toxicodindron.

Always give the tinctures and give at regular intervals; ten drops is a full dose for a hog. Where two medicines are to be given, give alternately; keep lime scattered in the pens and pastures; be as quiet

and gentle as possible with a sick animal, as violence or fright increases the violence of the disease. The only food should be sweet milk and bran mash; where the bowels are very constipated, give enemas of raw linseed oil or sweet oil.

The proper time to treat hog cholera is as soon as an animal shows the first symptoms of the disease, and, better still, as soon as it is known that the disease is in the neighborhood, for the old proverb, "An ounce of prevention is worth more than a pound of cure," is applicable in this disease. For preventive treatment, lime well and give of aconite and belladonna, tincture, equal quantities mixed, once a day, five drops to each pig, and carbolic acid once a day, two drops to each pig, in their drink.

**REPORT OF THE STATE BOARD OF HEALTH AS
TO CONTAGIOUS DISEASES OF ANIMALS.**

BY DR. E. M. HUNT, SECRETARY.

CONTAGIOUS DISEASES OF ANIMALS.

BY E. M. HUNT, SECRETARY STATE BOARD OF HEALTH.

At the close of our report, in January last, in addition to our State oversight, an investigation was being made in this State as to pleuro-pneumonia, under the direction of the Bureau of Animal Industry. A bill passed by Congress had provided for such inquiry, but made no provision for disposing of animals found to be affected with contagious pleuro-pneumonia. While we recognized the valuable assistance given in searching for localities of the disease, there was, at first, some increase in the number of affected herds reported to us; these, however, were entirely in sections known to be affected. Some herds, the owners of which frequently changed, as well as the cattle, required special attention. The reports made to us each month, or oftener in acute cases, showed that the disease was mostly found in Hudson and Bergen counties. Examination showed how well it had been eradicated in Essex and Union counties. Many of the cases found in Hudson county were chronic in their character. All acute cases were ordered killed, and the herds kept in quarantine for a proper time. Through January, February, March and April, the counties of Hudson, Bergen, Union and Camden were fully examined. Two herds which were badly affected in Hudson and Bergen counties, and one herd in Camden, required frequent examination or inquiry. The Camden herd was inoculated, but the others were found too much infected.

At the meeting of the Board of Agriculture, the Secretary of the Board again stated, that while the disease was held very much in check, it would never be eradicated by present methods. If all cattle from other States could be kept out, we should soon be rid of it; but so long as the stock yards of Pennsylvania and New York furnish us stock, without let or hindrance, so long as there is no registra-

tion or inspection of city dairies there will be outbreaks. Dairies in cities and their close vicinity keep up the disease. Cows kept in close quarters are especially liable to it; from these it spreads to better-kept herds.

We presented to members of the Legislature the propriety of a registration in cities and a small charge for the keeping of animals, in order to pay for skilled inspection. Until this is secured the action of the law will be incomplete.

In the early winter and spring months there was less of the swine disease than in the fall, but still enough to show that the virus was not killed by cold or frost. Cases occurred in Cape May county at the time of a deep snow. An outbreak, which killed several hundred hogs, at the Rio Grande Sugar Works, began in cold weather from an infected animal. The Board has been kept fully informed as to all recent investigations and opinions in the management of the disease.

Up to date of May 1st, we find no new views of management or treatment in advance of those contained in Circular XLVIII. of this Board. It was printed both in the Report of the Board of Agriculture, and the State Board of Health, and also widely distributed in separate form through the State. Those who follow its exact methods generally either avoid or limit the disease. In the spring, cases had occurred in Cape May, Burlington and Middlesex counties, and it still had a center in Warren county. It was not considered the duty of the Board to send veterinarians to investigate each case, as we are able by other methods to acquaint farmers with all the facts as to it.

Glanders, fortunately, has ceased in the car stables at Newark. Some cases have occurred at Trenton, and occasional sporadic cases are reported to the Board. The law of the State has put owners on watch as to it, and has resulted in good.

Tuberculosis is found to exist among cattle to a much greater degree than had been supposed. It is so much a menace to the milk and food interests of the State as to deserve the most careful inquiry.

In April, some cases of disease among sheep were reported by Dr. Rogers, of Westville.

Early in May, the Secretary of the Board presented to the Bureau of Animal Industry, at Washington, all the facts as to contagious diseases in this State, drawing attention especially to the swine plague. We found it still to be under the most careful investigation, and were assured that any new facts as to it would be promptly communicated.

During the month, two serious centers for contagious pleuro-pneumonia were found—the one in Burlington, the other in Camden counties. In both cases they were the result of cows purchased at the stock yards of Philadelphia.

The cases in Burlington county could be traced probably to a chronic case—a cow purchased in Philadelphia, who imparted the disease to cattle in this herd. The form of disease was here mild, and in marked contrast with the severe acuteness of the Camden cases. May 30th, two cattle were killed in each herd. We find the farmers ready to co-operate in all efforts to check the spread of the disease.

In June, reports were made of an additional outbreak in Burlington county, and prompt measures were resorted to to prevent any spread of the disease. The farmers in this county have come to realize the importance of prompt measures, and local boards are ready to co-operate without that delay which formerly occurred.

We found it necessary, on suspicion, to place in quarantine the herd of a cattle dealer who has been so unfortunate as to be the chief medium of introducing contagious pleuro-pneumonia into Burlington county, from the stock yards in Philadelphia, as he claims.

Some cases reported to us from Union county proved to be tuberculosis, a disease which is too rapidly spreading among the dairies in parts of this State. We have no law for the inspection of cattle-pens and stables in cities. So long as this is the case, they will continue to be the breeding places of disease. About the middle of July we were able to release all but about five herds in the State from quarantine.

We have recently received from Wyoming Territory a message from its Governor announcing that pleuro-pneumonia is epidemic in seventeen counties of this State. This intelligence is derived entirely independent of the Bureau of Animal Industry at Washington, which has made active and diligent search in this State, and also independent of the Board in this State which has oversight of the contagious diseases of animals. His Excellency has evidently been misled by some one who has more activity than insight or who thus is able to increase that fear of Eastern plagues which is felt by the owners of ranches.

In August there were several reports of contagious pleuro-pneumonia which required investigation.

Only one of these proved to be the disease. This was in one of

the best herds of the State, in a part of Somerset county bordering on Hunterdon. Four cattle had died. It was found necessary to kill several cattle in three different herds and to inoculate the rest.

Some chronic cases were found, but it has been impossible to trace the contagion with the usual directness, although some facts point to contagion from chronic cases in the same section.

Occasional cases of glanders continued to occur. Owners, however, are generally prompt in carrying out the law so soon as they are satisfied as to the disease and made acquainted with their duty.

In September a few more cases were reported in Hunterdon county.

The herds affected with pleuro-pneumonia were carefully guarded and many successful inoculations made. Other cases of glanders were traced to a drove of horses brought from Canada.

In parts of Salem county the outbreak of pneumo-enteritis (swine plague) was severe and the farmers had large losses.

More cases were also reported from Gloucester county, which were traceable to Salem county. Dr. Rogers says he is satisfied that isolation and carbolic disinfection do much to limit the disease.

The last of September and early in October, there were new outbreaks of pleuro-pneumonia in Burlington county, and two herds were reported in Camden county.

The stock yards in Philadelphia seem to be the chief distributors of contagion. Two or three herds recently affected are traceable to the same chronic source.

Late in October, another herd in Burlington county was traced to the same source. At date of November 1st, five herds in all remained in quarantine. Some cases examined near Mt. Holly proved to be tuberculosis, a disease which seems much on the increase.

The hog cholera is prevalent still in a few of the counties.

In November, the herds in Burlington and Hunterdon counties were the chief ones requiring attention, but the disease has not spread from those first implicated.

The inoculation of the Vincentown herd was successful in limiting one of the most malignant outbreaks with which we have had to deal. With all the misstatements and misunderstandings as to pleuro-pneumonia, it is our pleasure to find that where farmers are at pains to apprise themselves as to the disease and the State law in regard to it we have their full co-operation. Our only complaints come from those

who have been found in disobedience of the law, which, although often unintentional, has caused them much loss and put them in a complaining frame of mind. But it is our own experience and the testimony of the veterinarians of the Board, that all well-informed stock raisers and dairymen have come to realize how important is the protection which it affords them.

In December, as usual in the winter season, there was some decrease in contagious diseases of animals.

At the end of the year all herds in quarantine, but three, had been released.

Hog cholera has extended into Bergen and Morris counties and caused considerable loss. No remedy for it is known but isolation, and the close following of directions given in the circular of the Board aids farmers in limiting and preventing the disease.

In January, 1886, and at the close of the report, we have five herds of pleuro-pneumonia in quarantine. One of these in the neighborhood of Salem is of recent outbreak. The others are fully under control, and this one, it is believed, soon will be. We frequently get entirely rid of the disease for months in one entire county, but have it re-introduced from adjacent States.

In our experience with this disease, now extending over six years, we have never had a case in which it has spread to an adjacent herd after we had instituted quarantine. We now depend much on inoculation as a means of saving the particular herd attacked. If, as to this and the other contagious animal diseases, the farmers would accurately follow the circulars of the Board it would greatly aid in the control of these diseases.

Tuberculosis is on the increase in the State, and needs the careful attention of stock-men. It is all the more serious, because tuberculous cows continue to give milk, which is not fit for food.

Glanders has not prevailed in any one locality to the degree that it did in Newark; but it shows itself here and there through the State, and requires vigilance. The special bill as to it has been effective. As the bill did not make any special appropriation, the expenses come out of the provision made in the bill as to the contagious diseases of animals. It is a great pleasure to know that the important, and at times arduous, work which has devolved upon the State Board of Health in dealing with these diseases, and the perplexing complications which sometime arise, have come to be appreciated by most of the

farmers, and that we now so generally have their intelligent and cordial co-operation.

We append to this report valuable outlines and papers from several of the veterinarians, who, with ability and earnestness, have aided in the work, and to whom the thanks of the farmers of the State are due.

REPORTS OF STATE VETERINARY INSPECTORS.

REPORTS OF STATE VETERINARY INSPECTORS.

REPORT OF W. B. E. MILLER, D.V.S.

CAMDEN, NEW JERSEY, January 26th, 1886.

To the Secretary State Board of Health of N. J. :

SIR—In accordance with your request, I herewith submit a report of the contagious diseases of animals that have come under my observation and inspection from January 1st, 1885, to date.

January 2d, 1885, visited the farm of Samuel H. Rhoades, of Mount Ephraim, Camden county, and examined his herd of forty-five cattle. Found two sick with contagious pleuro-pneumonia, one of them very bad. Was informed by the attendant that one animal had already died. The herd was quarantined and revisited on January 13th, when another animal was found dead and the other appraised and slaughtered, post-mortem examinations being made of the carcasses of both, which revealed the disease in its worst form. On January 17th, accompanied by Dr. Dyer, revisited the farm and inoculated the healthy animals, thirty-eight in all, and isolated such as were sick or suspicious. From that time forward, for the following three or four months, regular visitations were made to the farm and a general supervision kept over the herd. There being no further evidence of any disease existing, the herd was released from quarantine and other animals were purchased and taken to the farm, which, on account of the great difficulty of procuring the proper kind of virus, were not inoculated at the time, nor have any been inoculated since, although several have since been purchased.

From the time of the purchase of the animals not inoculated, until the beginning of the year 1886, the cattle have been in excellent health, so far as the owner is able to discover. On January 20th, 1886, I was again called to the farm and found three sick cows—two of them, lung lesions; the third affected with disease of the urinary apparatus, due to parturition; she was one of the animals that had

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been inoculated, the two first mentioned were not. One of these cows, in consequence of her serious illness, prematurely gave birth to a calf, which, added to her other afflictions, hastened her death, which occurred on the 23d inst. I made a post-mortem the day following, and found characteristic lesions of contagious pleuro-pneumonia more marked in the pleura than in the lung tissue. The other animal was apparently better than when seen a few days before, she seemingly being affected with a milder form of the disease. The efficacy of inoculation, as a preventive measure, has been clearly demonstrated in this herd, and I shall at once inoculate the balance of the healthy animals.

On May 20th, 1885, I discovered an outbreak of contagious pleuro-pneumonia in the herd of Michael Feenfer, of Pavonia, Camden county. The herd was quarantined and the healthy animals inoculated. Of the sick several died, and others were slaughtered as ordered by you. The herd was regularly visited and a careful watch kept over it for several months, when it was released from quarantine and has since had other animals placed therein, all of which have until the present time been in perfect health.

I made several visitations to Burlington county in company with Dr. Dyer and examined animals affected with contagious pleuro-pneumonia on the farms of Levi Jones, near Pemberton, Samuel J. Branning, near Medford, and Shreeve Robbins, of Vincenttown, all of which will be duly reported to you by Dr. Dyer, who has had charge of the cases on the several farms in that locality.

On January 25th, 1886, I visited the herd of John Dawson, four miles from Salem, Salem county, and examined his herd, and found three animals very sick with pleuro-pneumonia and a fourth suspicious. The sick were isolated from the balance of the herd and every precaution taken to prevent the spread of the disease. The healthy stock will be at once inoculated and the sick slaughtered as the best means of eradicating the disease quickly and effectively. There are other herds in the vicinity that might be exposed, if radical means were not employed to wipe it out at once.

There have been several cases of glanders in horses and mules that have come under my examination in the city of Camden, together with a few isolated cases in the country, all of which were promptly destroyed. I was also called to see one case near Avis' Mills, in Gloucester county, the animal—a mule—having the disease in its very

worst form and rapidly approaching a fatal termination. I at once ordered the destruction of the animal, which was done in my presence, and the burial of the carcass as well.

Swine plague has been very prevalent in some sections of Camden, Gloucester and Salem counties. Especially is this the case in portions of Salem, many farmers having lost almost their entire herd of hogs. The disease in that locality was remarkably fatal in its character, old and young alike falling victims to its ravages.

REPORT OF WM. HERBERT LOWE, D.V.S., PATERSON, N. J.

Herewith I respectfully submit my report of such services as I have rendered the State Board of Health for the year ending December 31st, 1885.

Pleuro-Pneumonia.—During the year I have received several notifications of the existence of pleuro-pneumonia in different parts of Passaic, Bergen, Essex and Morris counties; but in all such cases, though I generally found lung complications, they were invariably other than those of pleuro-pneumonia contagiosa. That misconceptions should be entertained is not remarkable when it is remembered that broncho-pneumonia and tuberculosis (in certain stages) so often simulate contagious pleuro-pneumonia. It is my opinion that not one case of contagious pleuro-pneumonia at present exists in Passaic county.

Owing to the inadequate restrictions regarding the transportation of cattle from infected to non-infected counties, it is a question of time only till it does appear. Instead of waiting for the disease to invade large and, perhaps, valuable herds of cattle, means of prevention, in all possible ways, should be adopted and strict laws, fully and wisely enforced, should aid inspectors in making clean bills of health. Then, and then alone, can such results be reached as will crown the labors of the veterinarian as a sanitarian.

February 26th I visited a farm in Pequannock, where I found a chronic and suspicious case; history unsatisfactory; time, however, proved that the case was sporadic.

The owner of a large herd of milch cows in Preakness reported to

me, March 17th, that there was sickness among his cattle, and he feared that it was contagious. I visited his farm, but found only one cow sick, though two had died. There was no contagion. I was employed to treat the sick cow; she was suffering from congestion of the lungs, which soon yielded to treatment.

A petition signed by several citizens of New Bridge, near Hackensack, in Bergen county, was addressed, July 6th, to the health authorities, stating that

“WHEREAS, A contagious and fatal disease has attacked the milch cows of one of our neighbors, we deem it our bounden duty to submit the matter to your honorable body for prompt action, for the benefit of human health and the safety of the cattle of his neighbors.”

By order of Dr. Hunt, Secretary of the State Board of Health, I at once visited New Bridge. Dr. Wm. K. Newton, Health Inspector of the city of Paterson, and State Milk Inspector, accompanied me. At the time of our visit, though several cows had died, I found only one sick cow. She was suffering from sporadic pleuro-pneumonia. After having examined the sick cow and considered the history of each case of the so-called outbreak of “contagious and fatal” disease, I was satisfied that though there was fatality, the death of the animals was owing to causes independent of contagion. On a subsequent visit I found that the sick cow had recovered, and that the rest of the herd were in good health. All went to show that it would have been better for the interested parties to have employed a competent veterinary surgeon.

Tuberculosis.—Early in January a tuberculous cow was slaughtered in Paterson. She had been bought by a Paterson butcher from Martin Kane, of Caldwell, Essex county. January 14th, by order of Dr. Hunt, I visited Caldwell and examined the herd of Mr. Kane. At the time of my examination tuberculosis was not developed in any of his animals.

February 24th I found a tuberculous cow on the farm of George S. Kent, in Fairfield, Essex county.

March 11th I visited the farm of Henry C. Post, a milkman of Preackness. On examination I found one cow suffering from tuberculosis, which was immediately destroyed. The autopsy showed a development of the disease in one of its worst forms. The lesions being well marked, I sent portions of the lung and liver tissue to the

American Veterinary College, New York City, as new material as
ful for the students in pathology.

July 19th I visited the place of Andrew Harris, at Upper Montclair, and made post-mortem examination of a cow. Autopsy showed that the cow had suffered from tuberculosis.

Bovine tuberculosis is not rare, and this any local veterinary practitioner of experience in my part of the State well knows. There is one aspect of the subject which, I think, ought to receive more consideration than is generally given it. Pleuro-pneumonia principally involves a question of property and its money value, but tuberculosis, that is if it be communicable to the human subject through the milk and meat of tuberculous animals, as many eminent scientists now claim, has a signification of vast and wide-spread importance. As the law now stands, there is no authority by which tuberculous animals can be destroyed, and yet, considering the prevalence of the disease and its devastation, it is a question whether any of the other contagious diseases are worthy of more attention or stricter legislation than tuberculosis. This and other aspects of the subject have been frequently brought to public attention during the past year by the Paterson papers. The *Press* has frequently been painstaking in publishing such articles and announcements on sanitary subjects, as give clear and rational views to the owners of animals as well as to the public generally, thus aiding me very materially in the performance of my duties; for, with slight exceptions, I have been cordially received by persons who, no doubt, under less favorable circumstances would not have been slow to take exception to my investigations and, perhaps, have thrown serious barriers in my way. I have invariably tried to show stock owners, and not without considerable success, that we were their best friends both in the discovery of contagious diseases and the carrying out of such preventive measures as the accumulated experience of the veterinary profession has demonstrated to be essential.

Though there are certain organic conditions which cannot be discovered in the laboratory, and manifest themselves to the clinician only, yet it would be difficult to overestimate the value to the people of this State, of the number of analyses and microscopic examinations made by the State Milk Inspector.

Lead Poisoning.—On being notified, June 9th, by the Paterson Board of Health of a supposed contagious disease among the cows of

Passaic City, I immediately made investigations. The cows of quite a number of citizens, though stabled by their owners in different parts of the town, were pastured in one field, and many were the opinions, both in print and out of it, concerning the nature of the disease. Anxiety, and in some cases alarm, arose and pervaded the community lest the milk should be unfit for use. Apparently the field in which the cattle pastured could not be other than conducive to their comfort and welfare. It was supplied with a spring of excellent water, which an interested physician analyzed, many people supposing that the water was the cause of the sickness and death of such animals as died. Several practitioners, regular and irregular, had been called upon for their opinions. The disease was variously pronounced as meningitis, enteritis, brain fever, wolf in the tail, hollow horn, and so forth; but the mystery still remained unsolved. Each day the papers of Passaic and Paterson published full, if not true, accounts of such said mystery. One of the irregular practitioners who was consulted on the first appearance of the disease, not being able to fully define it to his own satisfaction or that of his patrons, had many wonderful theories. With a look of great gravity he said confidentially, "I tell you, doctor, there's no doubt that it is the plural-phenomena."

The result of my examination was that lead-poisoning or plumbism caused the sickness and mortality among the cows in Passaic. The correctness of the diagnosis was verified by the finding of pellets of white lead in the stomachs of several of the dead cows. At two of the autopsies I was assisted by Dr. A. M. Farrington, Veterinary Surgeon of the United States Cattle Quarantine at Garfield. The finding of lead caused further inquiry. My Hibernian assistant made a thorough examination of the pasture, where he found quite a number of paint pots and paint brushes, which probably reached there from some new buildings in the immediate vicinity of the pasture grounds. A fuller account of these cases was given in the *American Veterinary Review*, published by Dr. Liautard, of New York.

Hog Cholera.—February 21st I visited the farm of Harvey Hosier, at Pequannock, and found hog cholera there.

In March, Abram G. Hopper, of Ridgewood, Bergen county, lost over one hundred valuable Berkshire hogs. During March and April hog cholera appeared on several farms in Mr. Hopper's neighborhood, and the loss was large.

June 8th, visited Paramus and found that hog cholera existed on several farms.

November 14th, visited Garfield, Bergen county, where the disease had broken out.

November 20th, visited Fairfield, Essex county, and found the disease.

I have found the disease on many farms too numerous to particularize. In November the disease became very prevalent in Passaic, Bergen, Essex and Morris counties.

Actinomycoosis.—February 18th I was called to see a very interesting case. A cow owned by R. G. Ryerson, of Mountain View, was prostrate and in a very emaciated condition. I think I never saw a cow living having so deathly an appearance. There was a very great enlargement of the inferior maxillary region. In looking earnestly at the conditions while hearing the history of the case, I was forcibly impressed with the idea that I had a veritable case of actinomycoosis, described by Fleming as "a new infectious disease of animals and mankind." The owner agreed with me that the cow had better be destroyed. I held a post-mortem at once and sent the inferior maxillary region, tongue, heart, liver, kidneys, etc., to the New York Post-Graduate Medical College. Some time afterwards Prof. Thomas E. Satterthwaite, of that institution, informed me that the case was doubtless actinomycoosis, that one of his assistants was much interested in the subject and had made a very careful examination of the organs which verified the diagnosis.

Rabies.—It is not now necessary to dwell upon the subject of hydrophobia or, more properly, rabies. The ravages of rabies within the last few months have been so dreadful as to cause general alarm. If the greatly increased spread of the disease fails to put people on their guard, it would be worse than useless to try to impress anything upon them which might possibly appear in print. More than a year ago my attention was awakened to the subject by the number of rabid dogs of which I had authentic information, and by several cases which I was called upon to see in the earlier stages of the disease. I briefly mentioned these facts to Mr. P. T. Quinn, Secretary of the State Board of Agriculture, which led to the preparation of a paper, entitled "Canine Madness in Our Midst," which appeared in

the last report. Through my instrumentality a large number of dogs known to have been bitten by those that were rabid, and a large number of suspected ones, were destroyed in Passaic and Essex counties. In quite a number of instances, valuable but suspected dogs were secured beyond the possibility of doing injury until a sufficient time had elapsed to settle the question of the existence or non-existence of the disease. I spared no means at my command to put people on their guard, knowing that one need not be much of a prophet to predict consequences; and while some people supposed that I might be urging unnecessary precaution, time has shown that, if the paper in question was not useful in other respects, it gave at least timely warning. I said then: "Officials ought to have great discretionary power in dealing with suspected animals." Recent developments, I think, have settled the fact that there ought to be such special legislation as would enable veterinary inspectors to deal summarily with all real and suspected cases of rabies. Whatever the result of Pasteur's experiments, few will deny the importance of prevention. I do not hesitate to say that if proper warning had been taken respecting the cases I reported last year, fewer people would now have occasion to mourn the loss of their friends.

REPORT OF DR. A. S. LEATHERMAN, CLINTON, HUNTERDON COUNTY,
NEW JERSEY.

To the State Board of Health:

GENTLEMEN.—I have been asked for a statement or report of cases of contagious diseases, by Dr. E. M. Hunt, Secretary.

August 21st, 1885, I visited Wm. H. McIlhanney's farm, near Woodfern; found his herd of cattle afflicted with pleuro-pneumonia, said disease having existed for nearly two months, during which time they were attended by a veterinarian, but all attempts at cure proved a failure, and a serious one, too. We killed six cows; inoculated twenty-two head.

Mr. McIlhanney's losses, as reported by his dairymen, were, I think, six cows previous to my visits. Several chronic cases that did not take on flesh, were afterward killed and properly buried. Mr. McIlhanney's herd at present writing is doing well.

which I immediately inoculated.

Dr. E. M. Hunt on several occasions accompanied me in visiting McIlhanney's herd, giving me some very valuable instructions. We found there was trouble ahead, as Mr. McIlhanney had sold six head of cattle awhile before; G. C. Higgins & Brothers, near Three Bridges, Somerset county, were the purchasers; they resold to David Dills, three cows, near Centerville. These cattle were purchased in July, 1885. Also to Isaac Hann one cow, and one cow to David Lowe, Wertsville; the remaining two, G. C. Higgins & Brothers retained. The result was an outbreak of pleuro-pneumonia in G. C. Higgins & Brothers' dairy, near Three Bridges.

September 12th, 1885, I visited G. C. Higgins & Brothers' farm. They reported one cow had died, and two well-developed cases of pleuro-pneumonia I ordered killed. I inoculated the balance of twelve head.

September 26th. Visited G. C. Higgins & Bros.' dairy; found one cow having pleuro-pneumonia; ordered killed; balance all doing well. I frequently visited the affected herds, as also those which had been quarantined on account of serious exposure.

I do not think any blame should be attached to Mr. McIlhanney or G. C. Higgins & Brothers at the time of selling. Neither party had any knowledge of the character of the disease.

Mr. W. H. McIlhanney had borrowed a bull from John N. Yawger while his cows were affected; from Mr. McIlhanney he was taken to John B. Hough's, and then returned to his owner, John N. Yawger, where he was kept separate, and developed pleuro-pneumonia, nearly three months from date of exposure. The result was this outbreak. I am a strong advocate of inoculation; but, in my opinion, only in infected herds should it be resorted to. All exposed herds were quarantined as well as the affected ones. At the request of the Secretary I visited and carefully examined, in order to avoid its spread and shorten its existence, both the exposed and affected herds.

August 21st, 1885. Quarantined A. K. Smith's stable, Clinton borough, same having a horse glandered. Ordered horse killed, disinfecting and cleansing of stables, new mangers, &c.

Horse purchased from Jacob Johnson, Flemington, N. J., some time about three months previous. Mr. Johnson having shipped horses from Canada.

August 9th, 1885. Quarantined stable of Peter A. Dailey, Round

Valley, Hunterdon county, Mr. Dailey having a glandered horse. Ordered killed. The horse was also traced to Mr. Johnson's car load shipped from Canada; Dailey having purchased the animal from Johnson. Mr. Dailey has one remaining horse.

September 27th. Visited Jacob Kentner's stable, examined five horses and found four of the animals glandered. Quarantined and ordered killed.

September 29th, 1885. I visited Mr. Kentner's horses again; Prof. Liantard, at the request of Messrs. Kentner and Johnson, met me and examined the horses. His decision proved the same as mine.

October 1st. I killed the four diseased horses, by Mr Kentner's consent, leaving one brown mare, which to all appearances is sound and all right.

In all three instances the diseased animals were traced to the car load of horses shipped from Canada.

December 23d, 1875. I visited John J. Hall's herd near Clover Hill, Somerset county. Quarantined same. Found after examination one cow afflicted with pleuro-pneumonia, but in my opinion not sufficiently developed to produce virus. I again visited the herd, December 25th; ordered cow killed, and inoculated nine head.

I have frequently visited since; inoculations all seemed to have taken nicely. At present writing his cattle are doing well.

I will say Mr. Hall pastured next to Messrs. G. C. Higgins & Brothers, on the meadows where Higgins' herd was.

December 21st, 1885. I visited J. W. Berkaw's stable to examine a horse suspected of glanders, the same having catarrh trouble.

January 8th, 1886. I visited Mr. Hogland's herd, supposed to have pleuro-pneumonia, but found no symptoms of the disease.

During the year 1885, I visited a herd in Warren county, reported as Texas fever, but failed to find any traces. I have not seen any Texas fever since 1883.

REPORT OF I. W. HAWK, D.V.S., AND H. W. ROWLAND, D.V.S.

January 1st, 1886.

To the State Board of Health:

In accordance with our duties as veterinary inspectors for the State of New Jersey, we have the honor to submit the following report of the work done by us from November, 1884, until the present date:

found pleuro-pneumonia to exist in George Harmes' herd of cattle; also, Frank Keller's, S. Koskowsky's and A. Gutjahr. We put these herds under quarantine and reported them to the State Board of Health.

December 9th. We found pleuro-pneumonia in a herd of cattle near New Durham, in Hudson county.

December 16th. We killed a cow affected with pleuro-pneumonia that belonged to George Harmes; and, also, for Frank Keller, one; S. Koskowsky, one; F. E. Eulitz, one, and A. Gutjahr, one.

December 17th. We found a case of pleuro-pneumonia in Essex county, Newark.

December 18th. We killed one cow affected with pleuro-pneumonia, belonging to F. E. Eulitz, on this date.

December 22d. The case at Newark, we killed on this date, and put the rest in quarantine.

December 29th. We found a case at Marion, Hudson county, also another near Englewood, Passaic county. See date December 31st.

December 30th. We found a herd affected with contagious pleuro-pneumonia at Guttenberg, Hudson county. We at once placed said herd under quarantine and reported it to the State Board.

December 31st. We killed three cows that were affected with pleuro-pneumonia, for John Culla, near Marion, Hudson county.

January 7th, 1885. We killed another cow for a party near the above mentioned.

January 17th. We found at Marion on this date, one cow that had just died but a short time before and another very sick. The same date we killed three cows afflicted with pleuro-pneumonia at Guttenburg, Hudson county.

February 2d. We killed four cows at Guttenburg, Hudson county.

March 20th. We killed two cows at Guttenburg, Hudson county, that were affected with pleuro-pneumonia.

April 3d. We found pleuro-pneumonia near Hoboken; one cow had it very bad and soon died. We then put herd under quarantine and reported it to the State Board of Health.

September 24th. We found one case of pleuro-pneumonia in a herd of cattle at Higgen's Mills, Hunterdon county.

November 10th. We found upon this date a chronic case of pleuro-

pneumonia in Somerset county, near Bound Brook. We soon had the animal placed by itself and the next day killed her.

November 23d. We found upon this date a cow suffering along the road, near Bound Brook, in Somerset county, and we examined the animal and found it to have tuberculosis.

December 15th. We also found a case of tuberculosis at Linden, Union county.

December 19th. We visited Morristown, in Morris county, and we found parties that were complaining of hog cholera amongst their swine. One party had but a short time before lost one hundred and seventy head, and there were some dead that we saw while there, and also others very near dead.

We also visited Warren county and found parties complaining about the loss of so many of their swine from this dreaded disease.

REPORT OF W. P. SMITH, D.V.S.

TRENTON, N. J., February 1st, 1886.

To the State Board of Health:

GENTLEMEN—Having heard that glanders existed in stables belonging to Mr. James Murphy, October 1st, by request of Dr. E. M. Hunt, visited said stables; found that one horse had died, another had symptoms of the disease; had it isolated, and on October 17th, in company with Dr. Dyer, horse was condemned and destroyed.

January 6th, 1885. Visited same stables and found another horse suffering from same disease; had it isolated also to await full developments, and on the 17th of February, in company with Prof. Gadsden, of Philadelphia, it was condemned and destroyed.

March 7th. Visited same stables and found another horse suffering from pneumonia; it died on the 8th, after having been sick some time previous; post-mortem in all cases revealed glanders and farcy in different stages; the stables having been cleansed and fumigated it has had the desired effect of stamping out the disease in that locality.

July 3d. Visited stables belonging to the Delaware Coal and Ice Company; found horse sufficiently developed with farcy and glanders to warrant being destroyed, which was done on the 8th, and stable

cleansed and fumigated ; there has been no further trouble since from that source.

November 5th. Visited a cow in Spring street, supposed to be affected with pleuro-pneumonia ; cow died while I was there ; post-mortem showed tuberculosis.

November 6th. Visited cow belonging to Mr. Phillips, in Ewing ; he had lost two some time previous ; succeeded in getting him to kill her ; post-mortem showed tuberculosis extending throughout internal organs.

January 19th, 1886. Visited cow in Bond street, in the advanced stage of tuberculosis, which was destroyed by consent of the owner.

January 20th. By order of Dr. E. M. Hunt, visited farm of Alex. Grey, Aqueduct Mills, near Princeton ; he had lost two cows, and has two more sick ; post-mortem in the case of the one that had died revealed tuberculosis ; the other two were isolated.

I think this disease is gaining ground rapidly, and that there should be something done to prevent its progress throughout the country. While the State Board of Health have issued circulars on the subject of contagious and infectious diseases, every farmer should be supplied with the knowledge to care for animals when sick, so as not to spread any contagion or infection to other animals, and by so doing will aid in stamping out such diseases.

A HISTORY OF THE RED HOGS OF AMERICA.

BY COL. F. D. CURTIS.

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The written history of the Red Hogs of America does not extend beyond the meeting of the First National Swine Breeders' Convention held at Indianapolis, Ind., November 20th, 1872. At this convention both the Jersey Reds, of New Jersey, and the Durocs, of New York, were described as two families of red swine of similar characteristics; the Duroc "finer in the bone and carcass than the other reds." The following is the full report of the Committee on Jersey Reds, which was submitted to the convention, and adopted by it as authority, November 20th, 1872, at Indianapolis, Ind.

JERSEY REDS.

Mr. Curtis, from the committee, submitted the following report on Jersey Red swine:

"The positive origin of this family of swine is unknown. They have been bred in portions of the State of New Jersey for upwards of fifty years, and with many farmers are considered to be a valuable variety. They are of large size, and capable of making a heavy growth, five hundred and six hundred pounds weight being common. Mr. David Petit, Salem, Salem county, N. J., has known of these hogs for thirty years, and Mr. D. M. Brown, of Windsor, for nearly fifty years. They are now extensively bred in the middle and southern portions of New Jersey. In neighborhoods they were bred quite uniform, being of a dark red color; while in other sections they are more sandy and often patched with white. They are probably descended from the old importations of Berkshires, as there is no record of the Samworth—the red hogs of England—ever having been brought to this country; nor is it likely, as the Samworth were not considered a valuable breed, and were confined to a limited breeding. The reds resemble the old Berkshires in many respects, but are much coarser than the improved swine of this breed.

Characteristics.—A good specimen of a Jersey Red should be red in color, with a snout of moderate length, large lop ears, small head in proportion to the size and length of the body. They should be long in the body, standing high and rangy on their legs. Bone coarse, hairy tail and brush, and hair coarse, inclining to bristle on the back. They are valuable on account of their size and strong constitution and capacity for growth. They are not subject to mange.

[Signed,]

F. D. CURTIS,

Chairman of Committee."

Neither Mr. David Petit, of Salem, N. J., nor Mr. D. M. Brown, of Windsor, N. J., could tell the origin of the red hogs of New Jersey, nor could they obtain any authentic information from any other source. The name Jersey Reds was undoubtedly given to these hogs by the late Joseph B. Lyman, about fifteen years ago. Mr. Lyman at that time resided in New Jersey, and was the agricultural editor of the *New York Tribune*. Previous to this period they had been called Red Hogs and Durocs, as this name had been given to the red hogs of New York many years before. Mr. Lippincott, of New Jersey, was the first man to advertise these hogs as Jersey Reds. For about a century these red hogs were crossed and recrossed with the different breeds of hogs in the State, and also bred back to red hogs. Some farmers would breed for all red, while others preferred red and white patched.

In Saratoga county, New York; in Connecticut and in Vermont, the same type of red hogs were bred, with about the same system of breeding, or rather without any system or standard. Within a few years breeders here and there began to breed to a type of their own, and to work in a thoroughbred line. In 1877, the breeders of Durocs in Saratoga and Washington counties, New York, met and agreed on a standard of characteristics, a report of which breeding, together with the standard adopted, was printed in the agricultural papers. This was the first associated standard pertaining to red hogs ever printed, and it is the same substantially as was afterwards adopted by this Association. In Connecticut, the family of red hogs resembling the Jersey Reds and Durocs were called Red Berkshire; and in Vermont, where there was a similar family, they were called Red Rocks. The breeders of the so-called Red Berkshire and Red Rocks have cordially united with us, and our standard has been universally accepted by the breeders of all the red hogs of America who are breeding in the line of thoroughbreds.

The late William M. Holmes did more than any other breeder of red hogs in America to improve and perfect them. For many years he gave a great deal of time and thought to this object, and visited every place where there was an old family of red hogs, and obtained their history, as far as possible, and compared their characteristics. His testimony, after the most careful and painstaking examination, was that the report of the Committee of the First National Swine Breeders' Convention, herein printed, was correct. Mr. Holmes was present at the meeting of the Duroc breeders in 1877, above mentioned, and wrote the standard of characteristics.

The Duroc family of red hogs were so called by Isaac Frink, a prominent farmer living in the town of Milton, Saratoga county, New York. The writer knew him, and once, when his guest, was invited out to see his hogs "up to their eyes in clover." They were in splendid order, and the owner, with becoming pride, said, pointing to them, "That is the way to make pork." In the spring of 1823, Mr. Frink took a mare to the noted stallion Duroc, then owned by Harry Kelsey, in the town of Florida, Montgomery county, New York, about twenty-five miles away. There he saw a litter of ten red pigs, the production of a pair of red pigs, bought the year before by Mr. Kelsey, either from Oyster Bay, Queens county, New York, or imported by him from England. He moved from Oyster Bay to Florida. In regard to the importation of the pigs the history is not authentic, although Mr. Kelsey told Mr. Frink that they were imported. It is not likely that a pair of pigs would be imported from across the ocean, and he undoubtedly used the term, as many do now, incorrectly, and simply meant brought from a distance. If they had come from a foreign country a name would undoubtedly have followed them, whereas Mr. Kelsey simply called them *red pigs*, and Mr. Frink found it necessary to give them a name, which he did, and called them Duroc in compliment to Mr. Kelsey's famous horse.

Mr. Frink purchased a boar pig and took it to his home in Saratoga county. The services of this Duroc boar were much sought after, as the crosses were found to be very growthy, and the pork of excellent quality. A great many of the pigs were red and resembled the boar, which was long and deep in the body, with lopped ears, and thick and heavy in the shoulders and hams. The offspring were noted for their quiet disposition, as well as rapid growth. The popularity of these crosses extended all over the country, and they were

sought after for breeding. When a boy, the writer remembers a sandy boar of this blood, owned by his father, which he esteemed highly.

Red hogs were sought for by others, and in 1830 William Ensign, of Wilbur's Basin, in the town of Stillwater, Saratoga county, N. Y., brought a pair of red hogs from Connecticut, and the next year he got a few more from the same place. He bred them and sold them far and near. Saratoga county was a lively "pork district" in those days, and a great interest was taken in the breeding of hogs. The Frink and Ensign families of red hogs were crossed and the breed established. They have been bred ever since with more or less care and effort at keeping them thoroughbred, but no fixed type or standard was followed (except an individual one) until the one adopted, to which allusion has been made.

Some breeders have crossed the red blood on the modern Berkshires so far as to establish a family of red hogs with upright ears; and others have crossed on the finer breeds of white hogs and made crosses of similar form with the Berkshire cross, mostly red, but with continual reversion to black and white markings.

Two importations of the Samworth, the red hogs now bred in England, have been made by Thomas Bennet, Rossville, Ill., who imported four sows and three boars, March 7th, 1882, and William M. Holmes & Sons, Grinnell, Iowa, who brought over a pair, May 1st, 1882. Mr. Bennet made some crosses of these imported hogs upon the American reds, but the Messrs. Holmes slaughtered theirs without breeding them, as they considered them too much unlike in characteristics, and not equal to animals of their own breeding. With the above exceptions there is no authentic account of any importations of red swine, from any country, at least for many years, except plum-colored in the modern Berkshires.

When Hon. Henry Clay, of Kentucky, was in active life, he imported from Spain four red shoats. This was in 1837. Mr. Clay was much pleased with these red hogs and bred them on his farm at Ashland for a number of years. They were probably the original blood from which the Southern-bred Kentucky family of red hogs are descended. Some of these red hogs may now be found in Kentucky, changed in characteristics by continued crossing with the local breeds, and generally modeled after them, but, like all families of red hogs, retaining with remarkable tenacity the red color. Specimens of

these red hogs which I have seen had upright ears. Mr. Clay, it is stated by Hon. John R. Woods, of Albermarle county, Virginia, in a recent letter, presented some of these red hogs to a friend in Virginia. Traces of this blood in that State are now, however, quite limited. The most extensive dissemination of red swine seems to have been through the early importations of Berkshires, in which sandy and red color were conspicuous. Mr. William M. Holmes, in his researches of this matter, was of the opinion that about fifty years ago there was a considerable number of hogs with the red cast disseminated from New York to the adjacent country. The reversion to red is not yet bred out of the modern Berkshires, through whose blood it may now be noticed as frequently as among registered Poland-Chinas, notwithstanding the direct crosses of black, which have been made on that breed, and the turning of the ear upward.

The Duroc-Jersey hog is the old-fashioned Berkshire, with the old-time qualities which made the breed so famous. All the crosses which have been made have not bred them out, for the old type seems to have been the standard all of these years, and to have been well understood by many breeders who kept breeding back to it. The breeders of the modern Berkshires have bred in a different direction, preferring greater compactness, finer bone and more fat. This line of breeding naturally reduces the proportion of lean meat and makes a more chubby pig.

The New Jersey breeders had a fancy for large hogs and some of them pushed their reds to the extreme of large size, which necessitated large bone and largeness of body. These, of course, were essential for enormous weight. Other breeders did not follow these extremes, and bred their hogs after a medium standard.

The Durocs in New York and the red hogs of Connecticut were formed after a medium standard, and no doubt those also of Vermont. At the first meeting of the present Duroc-Jersey Association the breeders of the different families agreed upon a common standard of characteristics to represent their breed. This standard is the type, as near as may be, of the old Berkshire. In uniting under one head, the breeders of Duroc-Jersey swine have followed the same course pursued by the breeders of different families of the Poland-China hogs, and with one common standard and one common object, in one association, to endeavor to improve and perfect the swine of their breeding.

For years, the New Jersey breeders have striven to produce the

heaviest hogs in the United States, and they have succeeded. Whole litters of pigs have been fattened by them, which at one and a half years of age have averaged, dressed, seven to eight hundred pounds; and, when two years old, going up to twelve and thirteen hundred. They have well earned the reputation of "champion breeders of big weights."

There is wisdom in the consolidation of the different families of red hogs into one. This could readily be done, as none of them, including the hogs bred by Mr. Clark Pettit, were entitled to be classed as *thoroughbred*, and as there was no distinctive type settled upon for the different families, except the Duroc, which type or standard was found to be so desirable that in the first convention of the breeders of all families of red hogs it was adopted, with only a slight change, as the ideal standard for the association to follow. As a proof of its desirableness, I am informed that the association of Jersey Red breeders, of which Mr. Pettit is the head, have also adopted it. By the union of the different red families, the ability to obtain new and fresh blood is greatly extended; much beyond what it would be if confined to one family and locality. Rival antagonisms are avoided, and all breeders are brought into one fold to make it stronger to compete with other interests; weakness is made strength. The advantages of this wide range of blood, to prevent in-breeding, and to extend the strength and perpetuity of the Duroc-Jersey hogs, can scarcely be estimated, when the long future is to be taken into the account. It is a substantial foundation for a successful and permanent industry, in which the citizens of New Jersey should feel equal pride and interest with those of New York and our whole country.

NEW JERSEY
State Agricultural Society.

Annual Meeting held at Trenton, January 20th, 1886.

STATE AGRICULTURAL SOCIETY.

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VICE-PRESIDENT.

Hon. N. S. RUE.....Cream Ridge.....Monmouth county.
Gen. JOHN S. IRICK.....Vincentown.....Burlington county.
E. G. BROWN.....Elizabeth.....Union county.
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TREASURER.

CHARLES F. KILBURN.....Newark.....Essex county.

RECORDING SECRETARY.

WM. M. FORCE.....Newark.....Essex county.

CORRESPONDING SECRETARY.

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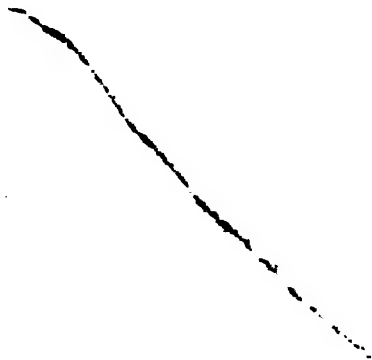
E. G. BROWN,

H. P. JONES,

E. B. GADDIS,

WM. L. TOMPKINS.

WM. MCKINLEY,



STATE AGRICULTURAL SOCIETY.

The stockholders of the State Agricultural Society held their annual meeting in the State House, in Trenton, on Wednesday, the 20th of January, 1886. A full Board of Directors and officers for the year was elected. The twenty-eighth annual exhibition of the society will be held at Waverley Park, the Society's permanent grounds, beginning Monday, September 13th, to the 18th, inclusive. The entry books will be open one month before the exhibition, at the Society's office, 764 Broad street, Newark.

CORRESPONDING SECRETARY'S REPORT.

To the Stockholders of the State Agricultural Society :

GENTLEMEN—It is a pleasure as well as my duty to present to you, at this the annual meeting of stockholders of the State Agricultural Society, a brief and succinct outline of work accomplished by the Board of Directors and Executive Committee of the Society for the year 1885. Before entering on this part of my task, it may not be out of place to briefly refer to some few of the husbandman's industries, the promotion and fostering of which our Society has always aimed to advance by practice and precept. It is not my intention to summarize in grand totals the aggregate yields and values of the same, of the staple crops of the nation, which run up to billions of dollars, but instead to look to the part our State contributes towards those, and call your attention to the ways and means of increasing our average yield of the crops grown in our State by better methods of cultivation, and also of the feasibility of adapting our systems and crops to our surroundings. It is a fact that the market prices of farm staple crops in the last year have averaged lower than they have for twenty-five years past. The causes of these low prices are traceable, but even with a lucid explanation of the causes it makes the Jersey farmer no happier to know these facts, when he is compelled to sell his corn at

forty-five cents a bushel, his wheat at eighty, his oats at twenty-six or eight, and other crops at equally low figures. The year just closed has been unusually bad and severe on the farmers of the State, not alone from low prices, but owing to the severity of the winter of 1884, the most severe that we have had for twenty years. Winter crops were badly damaged. In wide sections of this State winter wheat, rye and barley and small fruits were winter-killed, and did not yield half a crop or half the usual yield of such crops. With a maximum yield and low prices the profits are of course lessened; but when we have only half a crop and then low prices besides, the effects are almost disastrous. In a wide range of our State this was unfortunately the case in the year 1885, which year was not a prosperous one for the farmers of New Jersey. In fact, farmers who made both ends meet at the close of this year considered themselves quite fortunate. But it can be said in truth that the farmers and fruit growers in our State are no worse off than hundreds of manufacturers, who have been struggling against hard times and a dull market for the past four years, hoping for brighter and better times, although their hopes as yet have not been realized.

The beginning of the new year is a seasonable time to make good resolves, turn over a new leaf, and, when once turned over, keep going forward. It is a well-known fact, one beyond dispute, that the average yields of the staple crops in our little State are far below what they should be, and far below what the soil is capable of yielding under an improved system of cultivation. It is pitiable indeed to look at these figures on average yields in a State like ours, with the land naturally good, and with an abundance fertilizing material within easy distance, and these fertilizers can be bought and applied with a certainty of producing a handsome and profitable return for the investment. This is not a matter of conjecture or experiment, but it has been demonstrated hundreds of times, by our best farmers, and the plan has been advocated by our most reliable scientific men. It is the accepted doctrine of our most intelligent and enlightened scientific farmers. It is also the policy which this Society has always endeavored to teach, and the Society has endeavored to get our farmers to put into practice. The difference of the average yield of the staple crops in our State, given in the United States census, and those produced by individual growers in five and ten-acre lots, is almost appalling and incredible. I will cite as an instance a few of these to show the wide margin for improvement there still exists at this time.

We have before us this time and have had for the past five or six years, the most conclusive proof, in the form of sworn testimony in crop reports, competing for the State premiums. These crop returns are sent to the State Premium Committee, under affidavits countersigned by responsible witnesses who verify their accuracy and truthfulness. These, too, are grown on plots of from one to ten acres, and come from different counties of the State, from well-known and responsible men. The State Premium Committee have recently passed their judgment on some of these crops, and among them are J. H. Denise, of Freehold, of five acres of wheat; the yield per acre is given as $43\frac{27}{100}$ bushels per acre. John H. Hubert, five acres of rye, which yielded 44 bushels of clean grain and 11 tons of straw. John H. Denise, five acres of corn, which yielded $109\frac{3}{4}$ bushels of shelled corn. Henry Campbell, of Freehold, one acre of potatoes, the yield of which was 204 barrels, or over 500 bushels to the acre. Ralph Cooper, of Pompton, one-quarter acre of onions, 180 bushels, or at the rate of 720 bushels to the acre. John Van Storm, one acre of grapes, 13,151 pounds, and Henry Campbell, of Freehold, one acre of apples, the yield of which is 250 barrels, or over 1,000 bushels to the acre. I give these few, picked out of the number sent in to the committee, to show what our soil is capable of producing under proper and intelligently directed cultivation, and further to show the difference between the average yield of the State and the returns just given. The average yield of corn in the State is 39 bushels, of wheat $13\frac{1}{2}$, and rye 18 bushels, and potatoes under 74 bushels, and other crops equally low. But in the State premium crops, we have 109 bushels of corn, 44 bushels of rye and 500 bushels of potatoes, each grown on an acre of measured ground in our State. It is only since the State premiums have been offered through this society, that these large yields have been widely known, and they have without doubt been the means of doing great good to incite rivalry, and encourage better systems of culture and better and more profitable returns for the labor and capital invested.

The publication of these large crop returns in the annual reports of the State Board of Agriculture brings them before the best farmers of the State, who are likely to equal if not surpass the large yields of cereals, fruits and vegetables, by adopting the same systems. There is only one suggestion which I desire to make on this subject, and that is, that this year the State Premium Committee should double the amounts of these premiums for farm and garden crops.

It is an agreeable fact to record here that the Executive Committee chosen a year ago have acted in harmony, and with true earnestness, with the officers of the Society, adopting and faithfully carrying out such plans as in their judgment they thought would advance the best interests of the Society.

Since I have been officially connected with this Society (now sixteen years) there has been no Executive Committee who have worked with more energy, harmony and earnestness for the good and welfare of the Society than the Executive Committee of 1885. They deserve the thanks of the stockholders of this Society for the faithful performance of their arduous duties, given gratuitously, for the benefit of the Society. I will say here what I have said in a former report, that to be a member of the Executive Committee means responsibility, hard work, care and anxiety, if the allotted duties are well done, and I can bear testimony that they have during the past year. In the discharge of their duties the Committee have met many times and the meetings are protracted from two to four hours each. The natural and steady growth of the Society calls for more labor on the part of the officers and Executive Committee, and this is sure to follow when the affairs of the Society are managed on business principles. To enumerate in detail the multiplicity and great variety of work which comes before the Executive Committee during the year would take more space than is usually allotted to my annual report. It is sufficient to say that every subject and item is as carefully considered before the work is ordered as if it belonged to the business of an individual or private firm. To make our exhibitions a success, the first and most important question is to provide liberal accommodations for exhibitors in each department, and, secondly, and not less important, is that of providing liberal accommodations for visitors to the fair grounds. On these two features rests largely the success or failure of an agricultural exhibition. If we are to judge from results, as business men usually do, the exhibitors must have been tolerably well cared for by this Society for the last dozen or more years. In looking over the table of entries of exhibitors since 1874 to the present time there has been a steady and marked increase every succeeding year, with but two exceptions, and these two were only a trifle below the growing average. There is no reason why this increase in the entry department should not continue in the future as it has in the past ten years.

TABLE OF ENTRIES FROM 1874 TO 1885.

The following table gives the number of entries in each department, and the total number of entries each year since 1874:

DEPARTMENT.	1874	1875	1876	1877	'8	80	1881	1882	1883	1884	1885	EXHIBITS.
Special State.	59	70	106	106	1	70	146	149	106	155	140	{ Horses, cattle, sheep and swine.
Speed	52	98	105	99		...	103	126	107	66	107	Speed.
Departm't A..	107	72	68	73		09	62	75	46	.....	74	Horses.
" B.	392	431	633	715	8	50	963	837	845	984	972	{ Cattle, sheep, swine and poultry.
" C.	817	961	1005	1456	11	97	1492	1467	1913	1998	2027	Farm products.
" D.	548	701	705	1416	9	22	1061	1021	1182	1269	1118	Ladies' needle-work, etc.
" E.	164	182	233	256	2	40	783	521	477	639	729	Canned goods, honey, etc.
" F.	82	154	139	207	1	75	232	.....	38	219	81	Farm machines, tools, etc.
" G.	69	72	16	40		49	50	.....	57	83	94	Carriages, wagons, etc.
" H.	29	52	36	37	...	04	56	.....	52	57	34	{ Household furniture, woolen goods.
" I.	97	114	115	136	2	77	121	.....	85	112	102	Manufactured goods.
" K.	81	97	88	140	1	34	183	.....	00	219	855	Fine arts, etc.
" L.	.....	.....	.....	.....	.....	.....	72	.....	35	60	49	Sanitary appliances.
" M.	.....	.....	.....	.....	.....	.....	.....	.....	16	24	87	Dairy goods.
Total.....	2447	3004	3249	4681	41	291	5394	4967	6579	5885	6184	

LIST OF LIVE STOCK ENTRIES.

HERDS.

Ayrshires.....	2	Holsteins	4	Short Horns	2
Guernseys	1	Jerseys..	3	Grades.....	4
Number of herds.....	16	Number of animals in herds	80		

SINGLE ANIMALS.

State Classes.			Society Classes.		
Ayrshires	Bulls, 3	Cows, 6	Ayrshires.....	Bulls, 14	Cows, 20
Holsteins...	" 5	" 8	Holsteins	" 17	" 32
Guernseys..	" ..	" ..	Guernseys.....	" 5	" 6
Jerseys.....	" 9	" 6	Jerseys.	" 11	" 33
Short Horns.....	" 2	" 4	Short Horns.....	" 3	" 9
Grades	" ..	" 18	Grades	" 2	" 21
Herefords	" ..	" ..	Herefords	" 1	" 4
	—	—	Swiss	" 3	" 3
Totals	19	42	Totals	56	128

Number of animals shown in State and Society classes.....325

SHEEP.

State Classes.				Society Classes.			
Cotswolds	Ewes, 3	Rams, 2		Cotswolds	Ewes, 24	Rams, 9	
Leicesters	" 6	" 2		Leicesters	" 24	" 6	
Hampshires	" 6	" 2		Hampshires	" 18	" 11	
Oxforddowns	" 6	" 2		Oxforddowns	" 9	" 6	
Merinoes	" 3	" 2		Merinoes	" 9	" 3	
Shropshires	" ..	" 1		Shropshires	" 15	" 8	
Southdowns	" 9	" 3		Southdowns	" 30	" 15	
				Lincolns	" 3	" 1	
Totals	83	14		Totals	132	59	
Total				238			

SWINE.

State Classes.				Society Classes.			
Chester Whites ..	Boars, 1			Chester Whites..	Boars, 7	Sows, 11	
Berkshires	" 2			Berkshires	" 5	" 3	
Essex ..	" 2			Essex ..	" 4	" 3	
Jersey Reds	" 3			Jersey Reds	" 3	" 7	
Poland-China	" 3			Poland-China	" 4	" 8	
Yorkshires	" 3			Yorkshires	" 3	" 9	
Total	14			Totals	23	41	
Total number of sheep and swine entered for State and Society				Premiums			
				316			

These figures, taken from our entry books, speak more forcibly than words of the growth and growing popularity of our Society. They also show the necessity, from a business standpoint, of making permanent improvements to meet the increase in exhibits in nearly all of the departments. It is to be hoped that the incoming Board of Directors will carry out the intentions of the retiring board, that is, to extend and improve the grand stand; build more new cattle sheds on the grounds from year to year, as necessity dictates their need; erect a light and spacious shed to exhibit steel tools and implements; build an extension to the poultry house; and, what is still of the greatest importance, and an absolute necessity, the construction of commodious water-closets in different parts of the grounds. In my last year's report I urged that an effort be made to get horse rail communication from Newark to the fair grounds. I again bring this matter before your attention, and in doing so feel that if we had such communication, the grounds would be in constant demand during the summer months, bringing in a steady and large revenue every year.

It is a matter well worth your consideration. These are a few of the most noticeable improvements or additions which are needed in and about the fair grounds at Waverley, to keep pace with present demand for more and better accommodations for exhibitors and visitors.

The proposition to construct a large building for a "bench show" was before the Executive Committee for two months last summer, and, after mature deliberation, the Committee was unanimous not to erect a building, which would cost not less than \$8,000, without submitting the question to the stockholders. The State Kennel Club were willing to enter into an agreement to hold a dog show for five consecutive years, and give the Society forty per cent. of their admission fees, and the Kennel Club to be responsible for all the running expenses. This proposition, I understand, is still open for acceptance or rejection.

As the President has informed you in his address, the fair of 1885 was a success. The weather was perfect from the beginning to the end. The exhibits were equal if not superior in quality, and larger in number, than any other exhibition held by this Society, and the attendance of visitors was above the average in numbers. The success of the exhibition financially you have in the Treasurer's report, both in receipts and disbursements, which tells the tale in full. A part of these disbursements is a dividend of six per cent., ordered paid by the directors, at their meeting in Newark, in October last, of which fact you had substantial evidence some two months ago in the form of the Treasurer's check for the respective amounts due you on the stock of this Society which you own.

Before closing this brief outline of the work accomplished by this Society the past year, I desire to add a word which I feel you will all indorse. It makes no difference whether we are stockholders or members of this Society or not; we are Jerseymen, proud of our little State and her past history, and as Jerseymen we are one and all anxious to further and foster her interests and add by this means to her peace, welfare and prosperity. Our mission as good citizens should be to enlighten and elevate her agricultural industries, advance and increase her material wealth, and the number of her quiet, peaceful, happy and prosperous homes. By aiding in this noble work we are only performing the duties of loyal and true citizens of the State of New Jersey.

P. T. QUINN,

Corresponding Secretary.

TRENTON, January 20th, 1886.

TREASURER'S REPORT FOR YEAR 1885.

ELIZABETH, N. J., January 14th, 1886.

WILLIAM A. CLARK, *Treasurer*,In account with NEW JERSEY STATE AGRICULTURAL SOCIETY,
from January 1st, 1885, to January 1st, 1886.

RECEIPTS.

GENERAL ACCOUNT.

Cash on hand January 1st, 1885.....	\$928 57	
" from Mutual Driving Association.....	600 00	
" " Waverley Driving Association.....	500 00	
" " Stall Rents.....	107 50	
" " Estate of P. Jones.....	77 00	
" " William M. Force, Recording Secretary	30 00	
" " N. Y. and L. B. R. R., Account of Fair, 1883	80	
		<hr/>
		\$2,243 87

FAIR ACCOUNT.

Cash from Gate Admissions.....	\$9,861 53	
" " Grand Stand.....	919 00	
" " Special Privilege.....	1,810 00	
" " Stand Rents.....	4,286 00	
" " Railroad Admissions.....	7,347 58	
" " Speed Entries.....	1,977 50	
" " " Programme	125 00	
" " Stall Rents.....	25 00	
" " Society Entries.....	578 30	
		<hr/>
		26,929 91
		<hr/>
		\$29,173 78

DISBURSEMENTS.

GROUND ACCOUNT.

Cash for Haying.....	\$96 51	
" Tools and Implements.....	149 17	
" Overseer of Ground.....	541 71	
" Help to Overseer.....	134 62	
" Stable Account	78 98	
		<hr/>
		\$1,000 99

GENERAL ACCOUNT.

Cash for Account Fair 1884.....	\$65 44	
" Office Rent	75 00	
" Interest.....	60 00	

Cash for Insurance.....	\$79 93	
" Taxes	264 00	
" Premium, Mutual Benefit Life.....	75 10	
" Treasurer's Office Expense.....	88 42	
" Secretary's Office Expense.....	334 27	
" Directors' Dinner.....	183 25	
" Salaries.....	2,000 00	
" N. T. Association Membership.....	56 00	
" Survey and Map.....	25 00	
	<hr/>	\$3,306 41

IMPROVEMENT ACCOUNT.

Cash for New Buildings, Stalls, &c.....	\$381 00	
" Labor and Materials for Repairs to Buildings	772 74	
" Whitewashing.....	70 00	
	<hr/>	1,223 74

FAIR ACCOUNT.

Cash for Help and Expenses.....	\$437 20	
" Supplies Bought for Fair.....	212 55	
" Judges, Superintendents and Help.....	1,319 00	
" Advertising.....	651 05	
" Printing, Stationery and Tickets.....	366 80	
" Posting Bills.....	182 81	
" Press Entertainment.....	168 00	
" Refectory at Fair.....	331 85	
" Band	116 00	
" Stand Account.....	200 00	
" Police and Watchmen.....	307 00	
" Recording Secretary's Fair Expenses.....	87 23	
" Treasurer's Office, Ticket and Gate Expenses	376 43	
	<hr/>	4,755 92

PREMIUM ACCOUNT.

Cash for Speed Premiums	\$3,960 00	
" Dep't A, "	776 00	
" " B, "	2,677 75	
" " C, "	816 00	
" " D, "	298 50	
" " E, "	110 50	
" " F, "	356 00	
" " K, "	215 00	
" " M, "	54 00	
" Diplomas, Medals, &c.....	249 00	
" State Premiums 1884.....	445 00	
	<hr/>	9,953 65

DIVIDEND ACCOUNT.

Cash for Account Dividends, 1883.....	\$5 00	
" " " 1884.....	56 00	
" " " 1885.....	5,403 00	
	<hr/>	\$5,464 00
		<hr/>
		\$25,704 75
Balance.....		3,469 03
		<hr/>
		\$29,173 78

WILLIAM A. CLARK,
Treasurer.

NEW JERSEY

State Horticultural Society.

REPORT FOR THE YEAR 1885.

OFFICERS FOR 1886.

PRESIDENT.

ALEX. W. PEARSON.....VinelandCumberland county.

VICE-PRESIDENTS.

GERRY VALENTINEHammontonAtlantic county.
 E. S. CARMAN.....River EdgeBergen county.
 GEO. W. ROGERSMt. Holly.....Burlington county.
 EZRA STOKES.....BerlinCamden county.
 J. D. COLE.....Deerfield.....Cumberland county.
 JOSEPH B. WARD.....Newark.....Essex county.
 JOHN REPPGlassboro.....Gloucester county.
 C. W. IDELLHobokenHudson county.
 E. P. TOMLINSON.....Rosemont.....Hunterdon county.
 JOHN M. WHITE.....New BrunswickMiddlesex county.
 CHARLES BLACKHightstown.....Mercer county.
 JNO. S. GREEN.....MorristownMorris county.
 D. A. VANDEVERE.....Manalapan.....Monmouth county.
 GEO. C. WOOLSON.....Passaic.....Passaic county.
 RUFUS W. SMITH.....Elmer.....Salem county.
 D. C. VOORHEESBlawenburghSomerset county.
 E. P. BEEBEElizabethUnion county.

RECORDING SECRETARY.

E. WILLIAMSMontclair.....Essex county.

CORRESPONDING SECRETARY.

J. T. LOVETTLittle Silver.....Monmouth county.

TREASURER.

CHAS. L. JONES.....NewarkEssex county.

EXECUTIVE COMMITTEE.

WM. B. WARD.....Newark.....Essex county.
 C. W. IDELL.....HobokenHudson county.
 RALPH EGEHopewellMercer county.
 E. P. BEEBE.....ElizabethUnion county.
 JOHN C. VAN DOREN.....Manalapan.....Monmouth county.

FRUIT COMMITTEE.

J. B. ROGERS.....MilburnEssex county.
 WM. H. GOLDSMITH.....NewarkEssex county.
 CHARLES BLACKHightstown.....Mercer county.
 ELI MINCHShiloh.....Cumberland county.
 DAVID BAIRD.....Manalapan.....Monmouth county.

FLOWER COMMITTEE.

THEODORE EDWARDS.....BridgetonCumberland county.
 CHAS. B. HORNORMt. Holly.....Burlington county.
 C. RIBSAM.....TrentonMercer county.

VEGETABLE COMMITTEE.

THEO. F. BAKERBridgetonCumberland county.
 FRANKLIN DYE.....Trenton.....Mercer county.
 J. B. WARDNewark.....Essex county.

DIRECTORS OF STATE BOARD OF AGRICULTURE.

E. WILLIAMS.....MontclairEssex county.
 WM. B. WARD.....NewarkEssex county.

STATE HORTICULTURAL SOCIETY.

The State Horticultural Society held its eleventh annual meeting in the Assembly Chamber of the State House, at Trenton, December 29th, 1885. The meeting was called to order a few minutes after 10 o'clock by President Baker, who stated that we again assembled in this city by invitation of the Mercer County Board of Agriculture.

Ex-President Ward, of Essex, arose and said Mr. Ege, the President of the Mercer County Board of Agriculture, was present, and he would call on that gentleman for a few remarks.

Mr. Ege responded with the following words of welcome :

MR. PRESIDENT AND MEMBERS OF THE NEW JERSEY STATE HORTICULTURAL SOCIETY—To those of us who are deeply interested in the science of horticulture it is exceedingly gratifying to know that your meeting in this place one year ago was attended with so much encouragement, and was such a decided success that you have honored us with another visit, and, in behalf of the Mercer County Board of Agriculture, it again becomes my privilege to extend to you a cordial welcome, and pledging you our hearty co-operation in every effort put forth to promote and advance the interests of your Society, and in so doing let me assure you that I not only echo the sentiments of the members of our organization, but of all those interested in horticulture who were so fortunate as to attend the interesting and instructive meeting of last year.

The science of horticulture is making more rapid advancement than any other branch of the farmer's calling, and he must be wide awake indeed who would keep pace with its progress. Very many of the old methods are being discarded and cast aside and new theories advanced and supported by those who stand in the front rank among our most successful fruit growers, and it is a fact worthy of more than a passing notice that there is no branch of our calling which will awaken so much enthusiasm and such intense interest as that which

has called us together on this occasion. It must be admitted that there is also a rapid development and advancement in other departments of our agriculture: such as the improvement of our breeds of useful animals, and a more thorough and intelligent cultivation of the cereals; but these do not interest the progressive New Jersey farmer as much as formerly, for he feels that in order to avoid competition with the vast stock-raising and grain-producing States of the great West he will be soon compelled to abandon the production of bread and meat as profitable sources of income, and turn his attention to the cultivation of those products which from their perishable nature cannot be shipped long distances with profit.

We have in our county all the natural advantages favorable to such productions, and the exhibition of fruits and vegetables at the fair held by our Board last fall compared favorably, both as to quality and quantity, with any exhibition of the kind held in the State, and I have no doubt that its success was largely the result of the *shaking up of the dry bones* which was received through the meeting of your Society here last winter. And now, sir, in closing, let me say that we sincerely hope that at this meeting you will give us another such a shaking up that next year we may be able to report still greater achievements as the result of efforts put forth by this Society to awaken and stimulate an increased interest in this, the most profitable branch of our husbandry.

To this President Baker responded as follows:

GENTLEMEN OF THE MERCER COUNTY BOARD OF AGRICULTURE—Allow me, in behalf of this Society, as its presiding officer, to thank you for your kindly welcome to this, the capital of our State, the second time. It is exceedingly gratifying to us, as horticultural workers, that our efforts are not fruitless, and that the short time spent with you during our last annual meeting proved sufficiently interesting and profitable that you have allowed us again to renew and strengthen our brotherly relations, and as well our minds and purposes, through your and our experiences of the past year.

A society like ours needs a reason and a purpose for its existence.

In the one case we have sufficient reason in the circumstances surrounding us—a soil adapted to fruits and vegetables of all kinds, and markets at our very doors sufficient to consume all we have to offer.

Only a few years since gardening was unknown to the greater part of our State; Newark gardens supplying New York, and the gardens in the neck of Pennsylvania furnishing Philadelphia.

The rapid strides and outgrowth of horticulture in our State has been unprecedented, and to-day finds thousands of acres devoted to its culture, and even towns, which owe their prosperity and existence entirely to horticulture, have sprung up in almost barren wastes.

While such encouragements meet our efforts, is it not sufficient reason that we should purpose to pursue our course, and combine to fight against our numerous insect enemies, fungi and the general ignorance of the cultivation and proper management of our orchards and gardens?

We have kindred societies in many sister States who are fast finding out the cause and effect, the remedies and methods of applying them, for our numerous pests, also the wants and application of proper elements to fertility. Unless we combine our efforts, close up our ranks and advance in one solid column, our reasons for this Society will be gone, our purposes trampled under foot, and our future income cut off by our insect enemies and our more enterprising neighbors.

Therefore, allow me to urge every one present, who has a tree, shrub, vine or plant, which he cultivates, to join us in our efforts and add his mite of experience, knowledge and observation, during the past season, to the general fund of this meeting.

The Secretary announced the credentials of the following Delegates as correct:

I. W. Nicholson, Haddon Grange, Patrons of Husbandry.				
Geo. T. Haines,	"	"	"	"
Joseph O. Cuthbert,	"	"	"	"
John S. Collins, Moorestown	"	"	"	"
D. A. Vandevere, Monmouth Grange, Patrons of Husbandry.				
David C. Rulon, Crosswicks	"	"	"	"
Edwin Satterthwaite, Crosswicks Grange, Patrons of Husbandry.				
Alice A. Satterthwaite,	"	"	"	"
Joseph Hendrickson,	"	"	"	"
Abbie S. Hendrickson,	"	"	"	"
Elizabeth A. Rogers,	"	"	"	"

A cordial welcome was extended to them, and it was hoped that they would feel at home and participate in the proceedings.

urer and Standing Fruit Committee.

Messrs. John Wilcox, of Vineland, and Thomas J. Beans, of Moorestown, followed with papers on

FRUIT CULTURE—HAVE WE ATTAINED THE GREATEST PERFECTION IN FRUIT CULTURE?

Which led to the following discussion:

The Secretary took exception to the statement "that the poor could not supply their families with an abundance of fruit at current prices."

Mr. Idell.—Nothing can be bought in New York markets cheaper than our native fruits. None so poor but he can eat fruit to his heart's content. There is a class of people constantly finding fault with price of food products who can spend their money freely for beer and whiskey without a word of complaint. This is the class who find the most fault in New York.

Mr. Wilcox.—The statements of the two gentlemen are quite correct, regarding the fact that fruit and all articles of subsistence are exceedingly low. What produces these articles? Labor, of course; and the labor that produced them must have been poorly paid.

The Secretary.—Not necessarily so.

Mr. Wilcox.—You must understand that a laborer getting a dollar a day must first provide his family with the necessities of life before he can indulge in luxuries. Many laborers are intemperate; and I don't know but they have as good a right to be so as have the wealthy. But this proves nothing.

Mr. Quinn hoped the discussion would have taken a different turn, that we might consider the question whether we had arrived at perfection in fruit culture. He did not consider that we had made much progress in twenty-five years. He did not know of a good pear, except Clapp's Favorite, which had been introduced within that time, and no strawberry that had superseded the Wilson. We had advanced in methods of culture and in amount of production, if that could be called perfection. He saw hundreds of quarts of strawberries sold the past season at six cents a quart, and one would suppose the poor could indulge freely. The same is true of all other native fruits, and their cost should not prevent any one from indulging to his heart's content.

Hovey pear?

Mr. Quinn thought Dana's Hovey was introduced more than twenty years ago. There were now thousands of crates of fruit sold where there were fifty sold twenty years ago.

The Secretary.—True; and thousands more mouths to eat them.

Mr. Ward.—Aside from Mr. Quinn's suggestion, in regard to new varieties, there is another point we should think of. If we say we have reached perfection in theory we certainly have not in practice, as regards quality of our fruits. The strife has been to see how much fruit could be thrown on our markets, from extension of orchards and gardens. One thing to which we may attribute the low price of fruit is that a large proportion of it is comparatively worthless, or of inferior quality. This comes from carelessness and lack of proper attention on the part of the producer. If we were to produce half the quantity and improve the quality it would bring more remunerative prices. The apparent low price of poor fruit has a depressing effect on the sale of a really good article.

Mr. DeCou said we would all agree that it was better and more profitable to produce small crops of good fruit than large crops of inferior, but, with all our best efforts, the latter resulted oftentimes from contingencies beyond our control. The aim of the cultivator was good fruit. The result of his efforts was often the reverse of that aim, from causes unavoidable.

President Baker said the tendency is to attempt too much. If he chanced to succeed with a small bed of strawberries, a neighbor would try to outdo him by planting too many, often losing by the operation. Often a lack of attention to the details causes loss. His own strawberries averaged ten to twelve cents per quart during the season; some brought twenty-five to thirty-two cents a quart. They were fine fruit, and put up and placed in market in good shape.

Mr. Hale was surprised at the silence with which Mr. Quinn's remarks were received. Are we to let it go out that no new fruits of value have been added to our lists during the past twenty years, except the pears mentioned? What of the Cuthbert raspberry? the Worden, Brighton and Niagara grapes? the Sharpless, Manchester and Jewell strawberries? Are these and others not to be considered as new fruits of value produced in that time?

Mr. Beans cited the fruit shown at a recent Moorestown fair, as showing a marked improvement over that exhibited a few years ago.

supersede the Wilson and Downing ; the former for long carriage, the latter for near-by markets. In the Southern States one hundred acres of the Wilson are planted to one-half an acre of any other kind.

Mr. DeCou remarked that it was not due to any lack of effort to bring out new varieties, which are tried, found wanting and passed by. It only shows how difficult it is to improve on the established varieties.

Mr. J. M. White, of New Brunswick, N. J. ; E. P. Tomlinson, of Rosemont, N. J., and David Baird, of Manalapan, N. J., followed with papers on the important subject of

PEACH CULTURE AND THE YELLOWS.

The following is a synopsis of the points covered : The peach is regarded and as generally managed is short-lived, though trees have been known to thrive to the age of fifty or one hundred years in some favored locations, and they would in others but for the yellows.

This is now generally acknowledged to be a fungus, is contagious, can be propagated from seed by budding, or even inoculated by the knife in pruning ; seems to disappear in dry seasons and reappear in wet ones, as though excessive moisture might be an agent in spreading or communicating the disease. According to Professor Taylor, microscopist, "contact with water will dissolve parasitic fungi without destroying the spores." If so, it is evident the action of rain will tend to diffuse the spores over the body and roots of the tree. Solutions of sulphuric acid and alkies, he adds, will destroy them.

Treatment should be mostly preventive. Plant healthy trees, from healthy seed gathered from sections where the disease is unknown ; use buds from healthy stock, and plant on ground not before set to peaches. Eradicate, root and branch, on first appearance, every tree showing sign of disease, and apply alkies to neutralize or destroy the fungus. A law should compel careless growers to pull out and destroy their diseased trees on the same principle that we have laws to prevent the spreading of noxious insects. Experiment stations should make a study of the disease to find, if possible, a remedy and ascertain the best fertilizers to keep the trees vigorous. In one instance last summer an application of nitrate of soda to an old,

exhausted tree caused it to take on a dark-green, vigorous appearance, which it held through the season, in striking contrast with its starved neighbors.

The most successful growers use potash in some form or in combination with phosphoric acid. Some depend almost entirely on bone-dust alone. A few succeed fairly well with stable manure. Muriate of potash and fine bone, or boneblack, in the proportion of two to three, and four to six pounds to the tree, can be safely recommended. One used kainit with ground bone in preference to muriate of potash, as in every ton of the former he probably got eighty pounds of sulphate of magnesia and two hundred pounds chloride of magnesia and about forty-five pounds chloride sodium, which he considers destructive to fungus growth. Most of the orchards in his vicinity have also been well limed. Powdered sulphur was said to be a specific for yellows if applied to the roots of the trees.

Ravages of the borer, undrained and insufficiently fertilized soil, contribute to unhealthy conditions of the peach often mistaken for yellows. One skeptic did not believe in the yellows theory; if some one would supply him some pure pedigree seed thoroughly contaminated with yellows he would agree to grow healthy trees three to four feet high the first year. Keep out the borers; thin the fruit when overloaded—this often doubles the market value of the crop besides keeping the trees vigorous, as shy bearers live longer and attain greater size. Give good cultivation and sufficient fertilizers to keep the tree in healthy growth. In congenial soil trees properly treated will continue in bearing ten to thirty years, and more than pay cost of land each bearing year; even a partial crop will sometimes prove more profitable than a full one.

Although Downing catalogues nearly five hundred varieties, the best and most popular now in general cultivation are of New Jersey origin. Among them are Troth's Early, Mt. Rose, Reeves' Favorite, Stump, Crawford's Early and Late, Fox's Seedling, Smock and Keyport White. These are standard sorts in every collection, ripening in succession and giving a continuous supply of fruit almost from earliest to latest. The discussion tended to the impression that of all the early peaches introduced of late years there has been no improvement on the Alexander and Amsden, and of the large late red ones ripening in October, after sifting them out they had not essentially differed from Crawford's Late, the difference being due to peculiar location or surroundings.

Our location, between New York and Philadelphia, with our own cities and towns, besides the vast multitudes that throng our coast in August and September, making our ocean front one continuous city from Sandy Hook to Cape May, gives a home market and enables us to place our fruit on sale in that perfection of color and flavor only attained by fully maturing on the tree. In that condition no other fruit equals it, and no wonder none will compete with it. The crop in New Jersey will be found, taking a number of years in succession, greater than in localities further south, and the profits largely in our favor. Much of the thrift and improvement in New Jersey is due to the income from this fruit. Said one to me: "That orchard paid for my farm." Another: "The net receipt in two years from 1,800 trees was \$2,900." The Assessor of our town says: "I find those parties who are growing peaches are reducing their liabilities."

One large grower stated last summer that he received \$10,000 per week for his shipments, and another obtained \$1.15 to \$1.30 per basket from his wagon at the depot for one variety from trees thirty years old. These growers, especially the last, must have followed the injunction to "Dress the garden and keep it." How do these results compare with those from other fruits? In case of the pear we constantly hear of failures in loss of trees. The pear market seems to be fully supplied and the last year at lower prices than ever. One had been attempting to grow apples, peaches and pears, together with small fruits, and submitted as the result of his thirty years' observations and experience that there is more profit to be derived from careful and judicious cultivation of the peach than from any other fruit on the list.

Prof. Arthur.—I am exceedingly interested in the question of Peach Yellows, especially as to the cause of the disease. I have not had wide experience, but from the examinations I have made of trees, said to have the yellows, I have drawn some conclusions.

First. It seems to me quite reasonable to suppose that we have to do with a genuine disease. I do not refer to those cases where the trees have made a sickly growth and the leaves are yellow from reasons that may be readily assigned, such as want of proper fertilizing, drainage, soil, or care, or from insects or fungi that can be seen with the naked eye. I do not think any of these things cause the genuine yellows, but am inclined to think that it is due to something aside from all these. If it is a contagious disease it surely is not caused by

any of these things. I have examined specimens which I have no doubt were cases of genuine yellows, if there is such a specific disease.

I am interested in pear blight, and for that reason I am interested in this question. They are often coupled together, though I consider them very different diseases. I do not think they are any more closely related than consumption and small-pox, for instance. In pear blight it is easy to discover the bacteria, which we know are the cause of the disease; any one can see them in the mass with the naked eye, as I will explain later. The same appearances as to bacteria cannot be obtained with the peach yellows. Careful examination of trees affected by this disease reveals no bacteria in quantity; I do not say bacteria may not cause the disease, but there is no such abundance of them as in pear blight. If they occur in the yellows it will require special manipulation to demonstrate them as it does in consumption; they certainly are not abundant and easily found.

Mr. Augur, of Connecticut.—I do not live in a peach-growing State, but there are several enterprises of this kind in Connecticut of considerable magnitude. This fruit is unrivaled in excellence and beauty, and we are all interested in the health of the trees. A few years ago I noticed in Delaware they were comparatively free from the yellows, more so than in any other locality, though they claim not to have the disease in the South at all, but I found some well-marked cases in Tennessee, and I have more doubt about getting healthy seed from there than I had before.

I do not think the cause or remedy for this disease is well understood. Some say the cause is starvation. There are circumstances which seem to develop a yellow color of the leaf when there is no specific disease aside from neglect, yet I think there is a disease which is malignant and very destructive to peach orchards. What shall we do about it? I do not feel that I can instruct you on that point, but I have thought that in the first place, we ought to be very careful to avoid seed that is contaminated, for I think the disease is hereditary. When we get a package of seed, half of which has come from trees having the yellows, we shall get the disease, as well as through the buds from affected trees. Suppose we have healthy trees from healthy sources, how shall we escape the disease? I noticed in Delaware a very general use of lime. All the planters recommended its use. I asked one of them the object of using it, and he said to sweeten the land. Not a very scientific answer, it is true, but there may have

dough, and I am inclined to think the sanitary influence of lime on the soil is more than we have usually estimated.

I think it is a valuable application, though I do not claim it as a specific for this disease of peaches. Potash, kainit, salt, &c., I am inclined to think well of. Yet if a tree is badly diseased I doubt if any of these would cure it. I think the tree should be destroyed. I think the greatest safeguard is to avoid getting the disease. An ounce of prevention is better than a pound of cure in this case. We should be very careful to get the seed from healthy trees and from a healthy locality.

I would not depend on any locality being free from the disease. We should know the orchards and trees we get our seed from. I consider the Smock desirable for seed, if the trees are healthy. I know some trees now that are 40 years old. I think fertilizers and condition of the soil have much to do with the health of the trees.

One of the most successful breeders of cattle in Connecticut lays great stress on the matter of feeding. He feeds the new-born calf regularly, judiciously and systematically from first to last. I think this rule should apply to the vegetable kingdom. We have missed our peach crop in Connecticut for two years, it being destroyed by severe cold or by warm weather in winter, and we need more hardy varieties, or those that will resist more cold, or the great variations of our climate.

Mr. Ward proposed that the discussion close and we proceed to another subject.

WHAT PEARS TO PLANT FOR PROFIT IN NEW JERSEY.

Mr. Parry read a long paper on this question, detailing his experience for forty years, with a large number of varieties. He dwelt at length on the immense popularity of the Kieffer pear, and reiterated his oft-repeated caution to beware of the poisonous effects of quince sap, &c. He gave a list of thirty varieties which he would recommend for the amateur, and said it was a good plan for a beginner to consult his neighbors and ascertain what varieties did best in his neighborhood.

If he were to select three as being the most delicious pears to eat, he would name Bell Lucrative, Seckel and Lawrence. For market they were not attractive enough in appearance to bring high prices. *Size*

and salary are the two essential points to make horticulture well. It must please the eye, or purchasers will not buy.

The three most desirable pears to plant in New Jersey for profit—having regard to all the circumstances that enter into the combination necessary to profit, viz., location, soil and climate, health, vigor, productiveness, early and regular bearing—from his present knowledge and limited experience, he would recommend Lawson, Bartlett and Kieffer.

Mr. Caywood.—The idea set forth in the paper that pear wood became diseased from growing on quince is new to me, and I have been engaged in horticulture for the past fifty years. Our best authors have always said that quince does not injure pear wood. I do not wish to take exception to Mr. Parry's position, but I have propagated pear on quince all my life, and I do not think his statement is true.

Mr. Quinn.—I think we should express our individual opinions on this matter. I have devoted some years to pear culture, and consider the first requisite in this State is to plant standards. I should purchase standards in preference to getting dwarfs for nothing. The soil is important. It should be fairly rich, capable of producing 150 bushels of potatoes per acre. The best kinds, in his judgment, were Bartlett, Clairgeau and D'Anjou. He had not changed his opinion of the Kieffer, formed five years ago. It was a pear of inferior quality, and in ten years it will be necessary to present a chromo with every tree sold. They are all we could ask for in size, beauty, or color, but in eating one with my eyes shut I could not tell whether it was a pear or a potato.

Mr. Wilcox had eaten them when they were no better than a turnip. There is a condition in which they are good, but not the best. They should be eaten at maturity. Before they are soft they are not very palatable.

Mr. Repp.—About twelve years ago I set out a number of pear trees, eleven hundred, mostly dwarf Duchesse, following the advice of Mr. Quinn in his book. I have manured the ground very highly, given good cultivation, and it is said I have a fine pear orchard. I received \$1.50 per basket for my Duchesse. I set out more Duchesses a year ago, and if planting another orchard on the same land I should plant Duchesse. I had specimens weighing twenty to twenty-eight ounces, twenty-eight to thirty making a basket. Out of seven or eight hundred bearing trees only one has blighted.

Mr. Moon, of Pennsylvania, living within a mile of Trenton, had experience with pear orchards planted twenty-five or thirty years ago, with some fifty varieties popular at that time, and my experience has been that one of the most profitable pears is one not yet mentioned—the Rutter. I would plant Giffard for early, and the Bartlett, Rutter and Kieffer to follow. Previous to this year I have been dubious in my opinion of the Kieffer. I believe its merits have been overstated and its deficiencies overestimated. It is very variable with seasons, soil, climate and situation. I never saw a good one on our farm till this year, when we had some fine, large, good-flavored pears, which kept till the middle of October. As to profit, I think any pear as large and beautiful as the Kieffer cannot fail to be profitable, but I do not think it will continue to sell at \$1.50 per basket. The large number of trees planted would bring it into competition with many others. The quality of a pear does not make its success in the market. Pears used only for cooking are profitable only by reason of their productiveness. Its merits as a cooking pear places it second to the Sand pear and better than the common Choke pear.

Mr. Ward named for profit, Giffard, Clapp, Bartlett, Boussock, Seckel, Sheldon, Clairgeau, D'Anjou and Dana's Hovey.

Mr. Collins named Comet, Bartlett, Kieffer and D'Anjou. His opinion was that quince sap did not hurt pear wood.

Mr. Burt had 25 baskets of Kieffers on top-grafted trees, which he sold at \$1 per basket, while his Lawrence sold at 50 cents per basket. He could grow the Kieffer more profitably at 25 cents a basket than the Lawrence at a dollar.

President Baker received a sample of Mr. Burt's Kieffers grown on a Diel tree and found them very good, the first really good Kieffers he had ever tasted.

Following came the President's address.

The next paper was on the habit of growth and effect of the tops on the roots of fruit trees, by J. D. Cole, Deerfield, N. J.

Paper accepted and ordered on file.

Mr. Minch.—I have no fault to find with the work of the Experiment Station so far as it has gone. I only said they should give us some further information in regard to the feeding capacity of plants. I did not say that the Station said that marl was worth eight dollars a ton. I said that the analysis showed it contained a certain amount of potash, and if the market value of potash was correct we naturally conclude the

marl would be worth the amount stated, but when we consider that a large part of the potash is not available, it reduces the value at once. I would ask Prof. Cook if the potash in kainit was sulphate, as claimed by the German chemists, or muriate as claimed by Americans.

Prof. Cook replied that no one could tell, as the elements of both are in the kainit, and certain conditions may bring out one or the other. This is illustrated by sea water, from which glauber salts are precipitated at a low temperature, and epsom salts at a high temperature.

Mr. R. W. Smith, of Elmer, Salem county, N. J., then read a paper on "Growing and Storing Celery for Family Use."

At the evening session the question box was opened and a few of the subjects presented were :

What is the most profitable early grape for market that will be out of the way before the Concord comes in ?

Mr. Augur mentioned Moore's Early and Worden.

Mr. Idell said no grape can reach the New York market before the Concord.

What is the best selection of fruit trees on a small plot for market ; soil heavy loam, with gravel subsoil ?

Mr. Pearson named Red Astrachan apple.

Mr. Smith.—The Kieffer pear.

Mr. Caywood.—The Comet pear.

What is the difference between an apple and a pippin ?

Mr. Caywood.—The term pippin is applied to a crisp and breaking apple.

Mr. Idell did not think that would apply to all apples called pippins.

Mr. Minch.—It had never been decided and never would be.

How can a good-flavored Kieffer be known ?

Some one replied by eating it.

Mr. Jones said Mr. Rogers had some sent to him as typical pears of this kind, and with one exception we could not eat them ; that one was pretty fair. If I was hungry I could eat it. He gave me two, which I took home and kept till Christmas, when I cut and divided them among some friends, only one of whom could eat them.

Mr. Smith said he had eaten Kieffers grown in South Jersey that were very good, and did not know of any one who had eaten a South Jersey Kieffer who did not pronounce it of fair quality. I never saw one grown in North Jersey that was fit to eat.

this pear as any one. Mr. Baker sent him some of Mr. Burt's Kieffers, and among them was one or two that he could call good ; decidedly the only good ones he had ever tasted.

Mr. Rogers.—The Kieffers I received from Mr. Hansell contained half a dozen or so that were good, and they were the best Kieffers I have ever eaten.

Mr. Pearson said he wrote to Mr. Fuller this fall that he was agreeably disappointed in the quality of the Kieffers, as grown on his place the past season, and Mr. Fuller replied that he also had found them better than he had supposed.

President Baker was surprised at the quality of Mr. Burt's Kieffers ; he pronounced them fine, melting and juicy.

Mr. Van Doren had found those of his own growth very fine ; picked when green and put in a dark room, they were much improved.

Mr. Whitehead thought we could not ripen them as well in North as in South Jersey. By early picking and house-ripening we would probably get rid of the grittiness, and thought it would be a profitable market pear.

Mr. Caywood's experience was, it was a poor pear ; thinks he is too far north.

Mr. Augur.—From our experience we do not recommend it to our patrons. We have a number of trees which I do not care to have grafted to anything else ; by judicious thinning and house-ripening I think I could grow a pear of fair quality. I do not admire it as a table pear. We have had them canned, however, and they were pronounced excellent ; one of my sons thinks he could learn to like them.

Mr. Parry said it was not only more talked about, but planted more largely than any other. It was planted by the thousand where others were by the dozen.

Mr. Jones.—As apropos to this question, I find this item in *Orchard and Garden* :

A STORM THAT HAILS FROM OHIO.

George W. Campbell, of Ohio, writes as follows : " The Kieffer blights worse than anything else I have grown, and it is as tender in winter as a peach tree. Last winter killed them all and I am glad of it ; I would not give the thing room if anybody would plant me a

victims who have invested in the Kieffer for years to come."

On this the editor comments as follows: "In our tenderness of heart and with profound pity, we can only exclaim, Poor, poor Kieffer!"

The Secretary next read a paper on "Summer Decoration of Shaded Grounds," by William F. Bassett, of Hammonton, N. J.

Then followed a paper on "The Progressive Chrysanthemum," by John Thorpe, of Queens, L. I.

Papers received and referred.

The report of the Vegetable Committee, Dr. Ward, Chairman, was received and ordered on file.

The programme being resumed, the Secretary read a paper on "Grape Rot," by Isaac Welch, of Camden, N. J., followed by a paper upon the same subject by Mr. A. W. Pearson, of Vineland.

Papers received, and referred to Committee for publication.

DISCUSSION.

The Secretary.—These are the most insidious and difficult troubles the grape grower has to contend with; you may have the most flattering prospects through the season, almost up to the ripening of the grape, till the prize is almost within your grasp, and still lose it through these agencies.

Mr. Pearson.—Mr. Scribner, of the Agricultural Department, says he has tried sulphur for mildew, and it had no effect. This seems to show that our mildew differs from the European species.

Prof. Arthur.—I want to say a word in reference to the methods employed by the author of this paper, he having left a portion of the vines for comparison. So far as this paper goes it accords with all that science knows of this disease. But I have made no experiments in this line, yet it can be said, from what we know of the character and habits of fungi, that to gather the diseased berries and destroy them as soon as they appear is probably the fundamental method of fighting the disease. The spores do not hold their germinating power for a long time, but they produce enormously; we know of no way of dispersing them. If you cannot destroy these spores you can check them. Suppression is probably the best remedy. I speak of the *Phoma*. An application externally will have but little effect.

The Secretary said, respecting Mr. Pearson's treatment, he had mulched his vines, by which he thought he obtained the same condition of keeping down the spores that Mr. Pearson did by covering with a plow, yet he did not secure exemption from rot. Prof. Caldwell, of New York, stated at the Winter meeting of the Western New York Horticultural Society, last year, that soaking the stakes in a solution of sulphate of copper had been found a remedy or preventive of rot in France; a simple remedy, if it should prove one, but he had not tried it. The *Rural New Yorker* last season published a remedy—a solution of sulphur and lime—which he did give a thorough trial, he believes, and it had no effect whatever, as he could see.

Mr. Augur thought the paper a valuable and suggestive one. One thing to be learned from it was that when we find anything that promised good results we should have unity of action. One vineyard neglected in a locality might infect a whole community.

Mr. Collins asked if mulching was beneficial, or otherwise?

Mr. Caywood thought it favored development of rot; found clean culture and no stable manure gave best results. Bone dust is not good, unless very fine, as it operates on the growth of this fungus as vegetable matter does. He used wood ashes freely.

Mr. Vandevere.—I tried sulphur on one vineyard, none on the other; the former rotted badly, the latter not at all; used twenty-five tons of marl on both, cultivated two or three times. Those I pruned and thinned the most rotted the worst.

Mr. Goldsmith asked if he understood the author of one of the papers to say he had seen no white grapes affected with *Phoma Uvicola*?

The Secretary.—Yes; but no white grape was exempt, as far as he knew.

Mr. Goldsmith.—That is my experience.

Mr. Pearson said the most successful young vineyard that he had seen in Vineland was planted as follows: Holes were dug about three and a half feet diameter and three and a half feet deep. The vines, one year old, three bud-rooted cuttings, were planted at one side of the bottom of these holes, and the roots covered with about six inches of soil, mixed with a few handfuls of bone dust. As the vine grew, it was trained up towards the top of the pit, and when growth of weeds, etc., had formed a mat upon the soil covering the vine roots, another layer of six inches of soil was filled in. This process was

general level. These vines made vigorous growth and this season carried an enormous crop of fruit, resisting the influence of severe drought from which other vineyards in the locality suffered.

Mr. Vandevere thought the roots of the vine should be near the surface.

Mr. Pearson.—In Italy they plant deep; a crowbar being used to make the holes, and the cuttings, three to four feet in length, are inserted down to the upper bud, where the vine is purposed to stand. An Italian vine dresser, in Vineland, imported last year 1,500 cuttings of the White Malaga grape, all cut about this length, and has planted them thus in Jersey sands. It is the general opinion among our Italian settlers that vines should be deeply rooted.

The next subject presented was by Prof. J. C. Arthur, of the New York Experiment Station, on "Pear Blight, its Cause and Prevention."

Mr. Van Riper asked: How can you prevent too rapid growth in the spring?

Answer.—That is a practical question, and as you are all practical fruit growers, and I am only a scientific man, of course you know how to do that better than I.

Mr. Ward.—You said bacteria would enter the pores of the wood and not be visible to the eye for several weeks. The state of the case is only revealed by a climatic change, which causes the leaves to blacken and shows that blight exists in the tree. Is there any means of ascertaining before that period arrives that bacteria have affected the tree? Is there any other way of learning that bacteria are in the fruit, except by the milky juice; and can the bacteria go from the fruit to the twig? If we knew certain fruit was affected we could remove it.

Answer.—It is rare that the fruit will be affected. It is, therefore, not worth while to pay any attention to that. The fruit will shrivel or turn brown, beginning at the spot where an insect or an accident has first permitted the germs to enter. I have only found two or three affected fruit in a season. As to some way to detect the disease before it has gone so far as to blacken the leaves, I think it is practically impossible to do it. We can do many things theoretically that practically would be difficult, which is illustrated by my own experience. I was anxious to see the first indications of the disease last

however, in a hawthorn tree, about half a mile from the Station. I put my sample under the microscope and satisfied myself that it was pear blight. Then I went to the orchard and found one-third of the trees affected to some extent. I had previously overlooked them because the disease was very inconspicuous, and I had felt no certainty of finding it.

Mr. Jenkins.—It has been said that not every theory has been corroborated by experience. I believe that bacteria are the cause of pear blight. It has also been said that the Le Conte pear does not blight, yet some years ago I bought 600 trees in Georgia, and told the nurseryman that I did not want any pears grafted on quince stock, and he agreed that none should be sent me. The second year I went to my farm and to my surprise found three of the trees blighted—almost dead. I was discouraged. I made up my mind I would publish an article running down the Le Conte pear. But I began to look about the orchard and found a quince twig growing near one of these trees, the root of which was attached to the tree. I looked about carefully and found quince shoots on the other blighted trees, and came to the conclusion that the Le Conte pear should not be grafted on quince.

At a meeting like this, an old gentleman said his Le Conte pears were all blighted. In questioning him we found that the oak trees in the vicinity had blighted also. So we decided that the dry weather did it. If planting grapes four feet deep kept off the blight, and these trees were blighted by dry weather, I would like to ask Prof. Arthur how he reconciles this with his theory.

Answer.—I do not think I can explain either case without having made an examination. As to the case of the oak trees, judging from my experience, I do not think oaks would suffer from pear blight; because even the peach tree, which is much more closely related to the pear than the oak, cannot be made to take the pear blight, nor can grapes or any small fruits. The bacteria, in fact, will not grow in them. I think both the oak and the pear trees might have died from something else than genuine pear blight.

I know of no reason why the Le Conte pear should blight on quince stock and not under other circumstances. No pear is blight proof. All can take the disease, although some may not be much injured by it.

Mr. Minch.—Prof. Arthur says he finds this bacterium uniform,

and the blight it produces also uniform. Has he examined the diseases that closely resemble this, and yet are not the same?

Answer.—Of course anything that kills the leaf and shoot produces the same general appearance as pear blight. There will, however, be no exudation of gummy substance, and no peculiar odor, which latter some of you can detect better than I can. A certain insect is called the pear-blight beetle, because it kills the limbs and produces the appearance of blight.

Mr. Caywood.—I would ask Prof. Arthur if he does not think that blight will not originate more often from decomposing matter than where this matter does not exist? I put some manure on a row of black-caps between two rows of pear trees. These two rows of pear trees, without exception, were killed with blight, and no other.

Mr. Ward.—In your observations, have you noticed on some varieties of pear what we commonly call leaf-blight? In some varieties all the leaves turn black in a few days, often in one day. Is that identical with pear blight, or produced by bacteria, the same as that affecting the stem and bark of the tree, and would it injure the tree aside from denuding it of its leaves? They die suddenly and drop to the ground, and yet the tree itself seems healthy, and there are no ill effects next year.

Answer.—I have examined cases like this, as it occurs in our own orchard. I find that it is not due to bacteria, and is not connected in any way with pear blight. I cannot find its cause. Fungi are often present, but not always. I do not see that it does any special harm to the body of the tree.

Mr. Augur.—In a nursery I have seen hundreds and perhaps thousands of trees pulled up blighted. Would you not advise the thorough destruction of all branches and trees that are removed in consequence of blight?

Answer.—I would recommend it as a safeguard. Not that I am quite certain that you would have any remarkable results by destroying the diseased portions. It is reasonable to think, however, that it is to some extent a means of checking the disease.

Mr. Parry.—Amid the multitude of mystery that surrounds this matter we find it difficult to decide what is truth. We have had experience in the spread of blight along the roots of pear trees. The Le Conte is a vigorous grower on its own or other pear roots, but on

tried them by the hundred, and have never raised a Le Conte on quince stock. Most of them turn black and die in the third year.

Mr. Caywood.—Not a quarter of the pears will succeed on quince, but the finest Kieffers we have are on quince stock.

Mr. Minch.—For twenty years I have been investigating the subject of the pear blight. We planted a lot of standard pears, manured highly, cultivated the ground thoroughly, and they grew luxuriantly; but they all died of blight. We planted some more and let them alone. The ground was covered with grass, and the less care we gave the trees the less blight we had. It seemed as if the bearing of the fruit drew all the poison and bacteria, etc., out of the tree.

Last spring we had a tree top grafted with the Vicar of Winkfield. Early in the season I noticed that the upper part of the tree looked dark. I cut a bit from the tree and found the whole wood black; the whole Duchesse stock was black, but the Vicar did not seem to mind it at all, and blossomed profusely; but it soon drooped and died, and now looks like a genuine case of blight. The leaves are hanging on yet.

Thirty years ago we had a heavy snow, followed by severe cold. Some of our Bartletts had thrown up suckers four or five feet high. The smaller ones were killed outright above the snow line. Some of the stronger ones were only partially killed. These began to send out buds and shoots; but finally all died down to the snow line, but none below that line. After that many people found that if you induce a rapid growth the first two or three years you are very apt to have blight, but you can then force them and have fine fruit.

Answer.—The case in which the lower part of the tree was brown and the bark was still soft, but dead, is an instance very similar to what has occurred in my own experience. It may not have been blight in that case, but I have known similar cases in which it certainly was blight. In such cases the upper part of the tree may grow a whole year, or even put out leaves the second season, before being entirely killed.

Address accepted, with the thanks of the Society, and referred to the Executive Committee for publication.

Following is a very important paper which we give in full, by C. W. Idell, of Hoboken, N. J., on

MR. PRESIDENT AND GENTLEMEN—With our constantly and rapidly increasing interstate commerce in fruits and produce of the soil, the necessity of having a National standard of weights and measures to be enforced throughout the Union becomes more and more apparent. In the first place, we need a standard barrel and half barrel for measuring and shipping apples, pears, potatoes, onions, &c., in ; for, as it is now, a person contracting for a certain number of barrels of fruit or produce may receive a very different quantity from what he expected and paid for.

It is also quite common to ship potatoes, onions, &c., in bulk or bags, and on arrival in market to sell them by the barrel. Let a standard of weights be fixed for these articles for a barrel and bushel.

A miller is bound, by law, to give 196 pounds of flour for a barrel. Why should not the growers and dealers in fruits and produce be compelled to give a stated quantity also ?

The shipping of fruits and vegetables in boxes and crates has become a custom which has a tendency to foster fraud on account of the absence of all law regulating their size, and I know of no better way to control this point than to confine all scales of this order to the National standard of cubic inches to the bushel, and the sixteen and eight-quart fractions, with the exception of oranges and lemons. Two varieties of berries shipped in boxes which are cursed with this cheating process more than any others are the cranberry and huckleberry.

In Massachusetts a law was prepared for the benefit of the cranberry growers, defining a bushel of this fruit to be 32 quarts level measure, and a barrel must contain 100 quarts level measure. No dimensions were given for a box or barrel to contain this quantity, and the result is that we find there is put on the market four sized boxes, each claiming to contain the legal quantity ; yet they differ in capacity 198 cubic inches, or say three quarts.

The New Jersey Legislature passed a law, defining the number of cubic inches a box or barrel must contain of these berries, but it had no force outside of the State, so the growers could ship in any sized box they chose. A New Jersey standard bushel box contains 2,211 cubic inches, which is a trifle more than the United States standard, which is $2,150\frac{42}{100}$.

The heads of these boxes are twelve inches long, eight and three-

difference of one-half an inch in the width of these heads will make a difference of two quarts in the quantity of fruit; yet but few purchasers would detect the difference in size in the haste of buying them; so one can see the necessity of compelling all shippers to give the same measure.

In the early history of marketing huckleberries, a successful effort was made to use one-sized box, containing 16 quarts, to ship them in and sell on arrival without again measuring them. For years this plan gave satisfaction to both shippers and purchasers, but in time shippers began to cut down the size of the boxes, until now it is said there is no line of fruit sent to our market the sale of which is carried on so dishonestly as this, for many of the modern boxes do not contain more than eight quarts, and I have detected a few that had only six quarts in them.

There seems to be a radical defect in our wooden measures, for we find that some States ignore them to a certain extent, by passing laws that a bushel of certain grain must weigh a given number of pounds.

In this instance the size of the measure is ignored and weight substituted. Now, if weight is to be the standard, why not give a National weight instead of States giving separate and different ones?

The United States determines the number of cubic inches to make a measure known as a bushel, but States ignore it. Does this disposition to override the National laws develop patriotism or only selfishness? And if a State has the right to ignore the National law of measure, has it not the right to ignore all others?

The selling of our native nuts should also be confined to weights, instead of measures or weights, as may be agreed upon.

I have made a single exception to boxes in favor of those used by the Florida fruit growers to pack their oranges and lemons in. These growers deserve honorable mention, for they mark the number the box contains on one end, so the purchaser can see at once how many he buys.

The entire system of making baskets for the shipping of fruit in, needs a thorough revision, and the passing of a stringent law, governing their size, which should be confined to the sixteen and eight-quarts level legal measure, with the exception of berry baskets, which should be confined to the legal quart, pint, and half-pint; then we will have all the sizes we need, for trade or profit.

Suppose one buys a barrel of apples, potatoes or onions of a dealer,

expecting to receive one of the flour barrel size, but instead receives one that contains only two and a quarter bushels, instead of two and three-quarters bushels, what redress has he at law? None. He bought and received just what he paid for—a barrel; that means nothing, however, but a number of staves bound together by hoops and having a head at the ends.

The same can be said when one buys a basket of any of these articles; the dealer has the privilege of cheating the consumer all he can; and how thoroughly the sidewalk dealers and “licensed venders” understand this when they offer the skin quart basket that contains but two-thirds of a quart, or the round one-third of a quart cup for a pint, and the reverse end for a one-half pint.

When a consumer buys a barrel of flour and finds it deficient in weight, he can get immediate redress through the law. Why should not he be entitled to equal redress when he is defrauded in purchasing fruits or produce? But he is not.

The commission merchant who is desirous of protecting a grower who ships honest packages cannot always do it without suffering loss, for, if one sends him a box of berries containing thirty-two quarts, and a neighbor one that contains only twenty-eight quarts, he is expected to aid the one who cheats in measure by returning him the same price for twenty-eight quarts that the other received for thirty-two quarts. If you do not he will not make you another shipment, but try another dealer who will.

The retailers who wish to deal honestly are compelled to meet in competition dishonest men who cheat in every form they can to make money, and the entire trade in fruits and produce is open to their operations.

There is hardly a subject that deserves more careful consideration than this one, the establishment of standard measures. For the want of such laws our farmers have been defrauded of millions of dollars, and it is time this subject should be agitated by all Horticultural Societies throughout the land.

Let our Society take the lead in this matter.

Paper received and referred to Executive Committee.

The paper by J. T. Lovett, of Little Silver, N. J., on “The Causes of the Depression in Prices of Horticultural Products, and How They can be Improved so as to Afford the Producer a Fair Profit,” was received, and referred to the Executive Committee.

Mr. Whitehead.—I twenty years ago I concluded I would be a fruit-grower, and believed all I read in the papers was gospel truth. All this time I have lived on my own farm and planted apple and pear trees and other fruits, in accordance with the books and papers, and my own observation. I have been content to labor and to wait, because I was told the fruit business could never be overdone. I have since learned that these statements were often written by interested parties who had plants and trees to sell, and I think the business is overdone. I have fine crops and take care of them, but I find the dollars do not come in as I was told they would. I believe the book "Ten Acres Enough" has ruined more people and broken up more comfortable homes than any other book ever published. Our business is too much advertised in a commercial point of view. The *American Garden*, in a late issue, contains a flaming advertisement headed "\$500 per acre clear profit from flowers, vegetables and fruits." For one person doing this, ninety-nine will fail.

You might as well claim that \$200,000,000 could be made in railroads because Vanderbilt made it. What should we think of the shoemaker or tailor who would advertise \$5,000 a year could be made out of the shoemaking or tailoring business? I think money can be made in our business, with care and attention, but it has been too much advertised; it is overdone.

Mr. Lovett.—This gentleman says people come out to the country misled by "Ten Acres Enough." I say they were bankrupt before they came, and it was their own fault. He would place an embargo on the whole trade. He virtually says: "Plant no more trees; let me have all the profit."

President Baker.—I have a question here so apropos to this subject I will read it now. I notice that Dr. Loring, ex-Commissioner of Agriculture, has been recommending farmers in New England to cut down their orchards of pears and apples, and that even so conservative a writer as A. W. Cheever, of the *New England Farmer*, has been advising his readers to go slow on pear culture. This would seem to indicate that fruit culture in general, and pear culture in particular, was a failure in New England. Are New Jersey horticulturists of the opinion that fruit-growing is overdone in this country?

Mr. Whitehead.—I happen to have this very article of Mr. Cheever's in my pocket, which it may be well to have appear in our report, in connection with this discussion.

great deal of interest. There was but one man who wrote it, as there was but one Vanderbilt. Mr. Morris, the author of "Ten Acres Enough," was overtaxed with the cares of commercial life in Philadelphia, and selected a little country home, but did not expect to make a living on it. He planted blackberries and peaches, and sold them at a profit, and made a profit on his book; and there are many beautiful homes along our water fronts where people raise their own products—all the result of this book. But a man must not expect to make a living for himself and family on ten acres.

Mr. Blackwell.—The best market, in this city, for apples, twenty-five years ago, was forty-four cents per bushel; now it is fifty cents. A few days ago good apples would bring two dollars per barrel in Philadelphia. If that is not a good price I would like to know what is.

Mr. Repp.—I think one of the best remedies is to keep the poor fruit out of the market by growing it better.

Mr. Van Riper.—I think too many make a specialty of one thing. The man who produces a number of crops will be likely to succeed the best. An acre of apples will produce more money value than an acre of grain, but even apples will sometimes fail.

Mr. Dye.—General farming has been spoken of as profitable, but produce of all kinds is very low; we must take our chances.

Mr. Minch.—I have sixty-five acres in apples, and only regret I have not sixty-five acres more. This idea that fruit-growing is overdone is a mistake. They expect too much profit. I can make more money raising apples at fifteen cents a basket, of two and one-half pecks, than I can in any other way. I am planting apples all the time; the secret of small fruit growing is to bring the producer and consumer together. I went to New York to see what the cause of low prices were, and found strawberries selling at three cents per quart. I went to Newark and found them selling at fifteen cents.

Mr. Whitehead asked what the grower's profit was on those three-cent berries; he probably paid two cents to have them picked, the freight, baskets and commission had to come out of the other cent.

Mr. Minch.—I only mention this to show that if we could bring the producer and consumer together, both would be benefited.

Mr. Whitehead.—Thousands of bushels of apples were allowed to go to waste in Connecticut because there was no market for them.

Mr. Collins.—Fruit growers pay millions for the protection of other industries, while foreign fruits are imported free to compete with our products. I should like to see a duty put on foreign fruits that would protect us from them; bananas compete seriously with our strawberries.

Mr. Hale.—Two years ago, owing to a late frost, our crop was short, and to save us from loss we endeavored to get a good price for them, but the dealers said they would not bring more than ordinary, because of the foreign fruits in the market.

Mr. Augur.—It has been stated that the fruit consumption of our country should be increased tenfold; I believe this. The principal market I supply is Meriden, Conn., and I am inclined to think a little larger production would flood it. What shall we do about it? The population is 28,000, mostly mechanics. The fruit consumption ought to be several times what it is now. There are 130 liquor saloons, and all supported from the earnings of the people. In a store, one day, I heard a scantily clad child ask for a cent's worth of thread. How much do you suppose that family spent for fruit? The earnings of the people are going for that which is not bread. Instead of supplying them with whiskey and beer, we ought to stop this and have these earnings go for the necessities of life. I expected the people I should meet here would be thinking people, and I have found it so. We have good homes, we live well and have fruit the year round; but there are thousands of families who have nothing of the kind, and they ought to have it, and we should use our influence so they could have the comforts we enjoy.

The Secretary.—There are two sides to this question; we hear more of the successes than we do of the failures, but the successes are not as a rule boomed by the individuals themselves, but by those who use them as a means to induce others to engage in the business, that they may profit by their adventures. Now if fruit-growing was such a profitable business, as some parties pretend it is, would it not seem policy and good judgment on their part to stick to it instead of urging all creation to enter into competition with them and divide the profits? Does it not look a little as though they looked for their profits from other sources than their own fruit-growing? It is generally the mixed husbandry, in connection with fruit-growing, that furnishes the living and support of the family, while the whole receipts from the fruits are counted as net gain. This complaint of unprofitableness is by no

means local, it is universal. In Ohio hundreds of bushels of strawberries were sold on the streets the past season for four and six cents per quart, the latter price for Cumberland and Sharpless; 500,000 quarts arrived in Philadelphia in one day—market glutted; 60,000 quarts sent into the city of Albany, N. Y., within a radius of ten miles, June 23d, sold at three to six cents a quart. You have just heard of the Connecticut and New York markets; the same condition of things exists in most of our large cities. Is it any wonder growers fail to find the profits at such figures? Even Parker Earle, of Illinois, who is sometimes called the Strawberry King, who from the magnitude of his operations ought to find an aggregate profit if any one can, confesses in a letter to the editor of the *Country Gentleman* that if it were not for his investments in the business he would not go into it, with his present knowledge, for the profits promised.

Following the discussion was a paper read by Franklin Dye, of Trenton, on "Experiment in Growing Potatoes." Paper accepted and referred to Executive Committee.

The next topic treated was "The Best Methods of Retarding the Ripening of Fruits by the aid of Ice."

Mr. Wm. H. Goldsmith, of Newark, introduced the subject with a brief paper.

Mr. W. R. Ward, of Newark, then read a paper on "The Preservation of Fruit by the Use of Ice."

Mr. Goldsmith, in reply to an inquiry, stated that a temperature of thirty-five degrees would do for pears, and thirty-five to forty degrees for grapes. If the stems of grapes were free from mildew, they kept well; otherwise, not. A lot put in a patent refrigerator kept no better than those in his ice house.

Mr. Collins thought the house should be constructed so the ice could be put in as it was cut, and save handling.

President-elect Pearson was then invited to come forward, and was introduced by President Baker, who hoped the Society, under his administration, would be even more prosperous than during his own.

President Pearson thanked him for his good wishes, and the Society for the compliment in selecting him as their presiding officer, and asked their indulgence. He would try to do the best he could.

Mr. Jones moved a vote of thanks to our retiring President, Theo. F. Baker, "for the very able and efficient manner in which he has presided over our deliberations for the past two years, and for the very

courteous and affable manner with which he has treated all the members, assuring him that we will ever keep his memory green."

The Secretary calling for a vote on the resolution, it was unanimously adopted.

Mr. Ward.—And now, Mr. President, allow me to present you, in behalf of a friend of the Society, this bunch of beautiful roses. Please accept their beauty and fragrance as emblematic of our love and esteem for you.

President Baker accepted these kind expressions of his associates with heart-felt thanks, and expressed his cordial good wishes for the Society and its individual members.

Mr. Whitehead.—As there seems a disposition among some to leave, I wish to offer the following resolution :

Resolved, That our thanks are due and are hereby tendered to the Mercer County Board of Agriculture for their kind attention and efficient efforts to make this meeting a success; to the press for favorable notices; to exhibitors, and all who have in any way contributed to this end.

Adopted unanimously.

The question of future meetings was called, but as many were leaving there was no disposition to discuss it, and on motion it was left to the Executive Committee.

Mr. Dye remarked that the Mercer County Board of Agriculture would be glad to have the next meeting in Trenton again.

After which the meeting adjourned *sine die*.

The above abstracts from the Eleventh Annual Proceedings of the New Jersey State Horticultural Society comprise but a small portion of the entire report. The valuable and important papers read, with the discussions, can be found in full in the eleventh volume of the Transactions of the New Jersey State Horticultural Society, which can be obtained by addressing E. Williams, Secretary of the Society, Montclair, New Jersey, enclosing one dollar, thereby becoming a member of the Society.

CRANBERRY GROWERS' ASSOCIATION.

CRANBERRY GROWERS' ASSOCIATION.

The sixteenth annual convention of this Association was held at the Court House, Toms River, N. J., August 28th, 1885.

The President, Dr. J. H. Brakeley, presided.

The reading of the minutes were dispensed with, the same having been printed and sent to all members. The minutes were approved as printed.

The Secretary reported twelve names added to the roll of membership and nine had been dropped by request, or for non-payment of dues.

The Treasurer made the following report for six months ending August 25th, 1885 :

Cash received for dues and membership.....	\$88 00
Balance from last report.....	58 18
Total.....	<u>\$146 18</u>
Disbursements for printing and mailing reports... ..	141 89
Balance.....	<u>\$4 79</u>

The President, Dr. Brakeley, read an interesting and instructive paper on the vitality of the vine worm (*Auchylopera vacciniana*), and the berry or fruit worm, with description, habits and effective methods for their destruction. The paper is printed in full in the official proceedings of the Association.

The following, on the subject of standard measure, is from the Statistician's report at this meeting :

PACKAGES.

The Massachusetts law requires cranberry crates to hold 32 quarts, and barrels 100 quarts, level measure.

Reference was made in my last annual report to different sizes shipped to New York from Massachusetts under this law. It is sup-

posed that 32 quarts, level measure, means a United States standard bushel, which contains 2,150 $\frac{1}{2}$ cubic inches; but the largest Massachusetts crate found last season in New York contained only 2,112 cubic inches, and the smallest 1,914.

I am now advised that the principal crate makers in that State have under this law concluded to adopt the size 22 $\frac{1}{2}$ x12x7 $\frac{1}{2}$ inches, inside measure, which gives 1,991 $\frac{1}{2}$ cubic inches, or, as compared with the United States standard bushel, 29 $\frac{62}{100}$ quarts, while the New Jersey standard crate, containing 2,211 cubic inches, would by the same rule hold 32 $\frac{2}{10}$ quarts.

I am quite unable to see by what reasoning our Yankee friends can make a crate of the cubic capacity of only 29 $\frac{62}{100}$ quarts satisfy the recent law of their own devising, which requires the crate to hold 32 quarts, level measure.

I think our Massachusetts friends made at least two mistakes in the provisions of their law, viz.: in not making the crate to hold one-third of a barrel, and in not prescribing the exact dimensions required.

Practically they are making another mistake in constructing and using crates that hold nearly 2 $\frac{1}{2}$ quarts less than their law prescribes, and 3 $\frac{1}{4}$ quarts less than the New Jersey standard crate. The New Jersey standard crate, which is practically one-third of the Massachusetts legal barrel, is the measure recognized and sought for by all large dealers, and it has been a great promoter of equity and convenience. That its merits do not of their own force override and drive out the smaller crates, must be attributed to the ignorance and carelessness of retail dealers and consumers, for it cannot be supposed that they would knowingly accept the smaller measure at the price of the larger, or at a relatively higher price. The New Jersey standard crates do not conspicuously announce themselves as such. The brand, when well put on, is obscure and seldom noticed unless sought for, while many are imperfectly branded or not branded at all. This is even more strikingly and mischievously true of the undersized crates which are required by law to have their relative size conspicuously marked.

I suggest as an efficient means towards remedying these difficulties that the Association furnish to box-makers "pasters," printed in bright colors, to strikingly announce the standard size, as well as the inferior sizes, to be used instead of the old metal brand heretofore furnished for standard crates, and of the inconspicuous marks, or no marks, upon smaller crates.

All packers in standard crates must see the advantage to them of this course, and I think the Association could devise means to enforce the law upon packers in small crates.

Some such plan seems the more needful and proper on account of the small crates from Massachusetts. If New Jersey growers adhere to their long-established standard, they are certainly entitled to the benefit of the greatest possible publicity.

I am ignorant of what progress has been made by the committee charged with the duty of applying to Congress for a National standard of measure for cranberries, but I fear it may be long before the equity of uniform measure is obtained in that way. If Massachusetts and New Jersey growers would unite upon laws in their respective States practically identical, New York and Pennsylvania could hardly hesitate to enforce the same sizes, and this would practically settle the question for the Atlantic States.

ANNUAL MEETING.

The sixteenth annual meeting of the American Cranberry Growers' Association was held at Room 5, Masonic Temple, January 19th, 1886, the President, Dr. Brakeley, in the chair.

J. O. Evans was elected Secretary *pro tem*.

The minutes of the sixteenth annual convention were approved as printed.

The Treasurer's report was read, as follows:

Receipts for dues and membership since August	
25th, 1885.....	\$33 00
Receipts for <i>Bulletin</i>	69 00
Balance from last report.....	4 79
Total receipts.....	\$156 79
Paid for printing and mailing reports, &c.....	49 50
Balance in hand of Treasurer.....	\$107 29

LIABILITIES.

Unpaid bills for collecting statistics and printing <i>Bulletin</i>	\$188 26
Less cash in hand.....	107 29
Leaving a net deficit of.....	\$75 97

Respectfully submitted,

A. J. RIDER, *Treasurer*.

audit the Treasurer's accounts.

A communication was read from the Secretary and Treasurer, A. J. Rider, expressing his regret that he was unable to attend the meeting, on account of a funeral, and asked the Association to excuse him from further service as Secretary and Treasurer, a position which he had held for thirteen years. The membership had become large, and the work of compiling and reports and attending to necessary correspondence had become burdensome to one who already had too much to do.

The communication was laid on the table.

Dr. Brakeley, President, gave notice of the death of Second Vice-President, Dr. E. S. Merriman.

On motion, the President was appointed a committee of one to express to the widow and family of the deceased the condolence and sympathy of members of this Association.

The Auditing Committee reported that they had examined the accounts of the Treasurer and found them correct. Committee discharged.

Messrs. Quicksall and Satterthwaite were appointed a committee to nominate officers. They nominated the following, who were duly elected :

President.—Dr. J. H. Brakeley, Bordentown, N. J.

1st Vice-President.—Hon. Theo. Budd, Pemberton, N. J.

2d Vice-President.—C. L. Holman, Lakewood, N. J.

Secretary and Treasurer.—A. J. Rider, Trenton, N. J.

Statistician.—N. R. French, Elizabeth, N. J.

Representative in State Board of Agriculture.—Dr. J. H. Brakeley, Bordentown, N. J.

Executive Committee.—J. H. Brakeley, A. J. Rider, Theo. Budd, N. R. French.

Corresponding Secretaries for New Jersey.—M. M. Chew, Williamstown, N. J. ; Chas. L. Holman, Lakewood, N. J. ; Dr. L. W. Brown, Vineland, N. J. ; Alfred Satterthwaite, Crosswicks, N. J. ; William Quicksall, Hornerstown, N. J.

Corresponding Secretaries for Massachusetts.—Isaac Alger, Attleboro, Mass. ; O. M. Holmes, Box 5223, Boston, Mass.

Corresponding Secretary for Connecticut.—D. C. Spencer, Old Saybrook, Conn.

Corresponding Secretary for Rhode Island.—H. C. Sampson, 10
Weybosset street, Providence, R. I.
Corresponding Secretary for Long Island.—Wm. Jagger, Jerico,
L. I.

The President appointed the following Standing Committees:

Standard Measure.—Crane, Rider, Satterthwaite, Collings and
Chew.

Foreign Trade.—French, Rider, S. H. Comings.

Scientific Investigations.—J. H. Brakeley, Dr. Goodell, Professor
George H. Cook.

Insects.—J. H. Brakeley, Holman, Applegate.

The Statistician made the following report, which was adopted with
the thanks of the Association :

STATISTICAL REPORT.

MR. PRESIDENT—At the convention on the 28th of August last
numerous estimates of the crop on the vines, contrasted with actual
crop of previous year, were summed up, with the remark that, "if
numerous enough to insure a correct estimate, they would indicate
a crop on the vines of more than 750,000 bushels, or 250,000 bushels
more than the large crop of 1879.

After summarizing the estimates from the principal cranberry
growing sections, your Statistician made a lump estimate, as follows :

	Bushels.
New Jersey.....	175,000
New England.....	225,000
Wisconsin	150,000
Other Western States.....	10,000
Total.....	560,000

Further light may now be drawn from the recorded movement of
the crop, as shown by the following table from the *Bulletin* of Janu-
ary 2d, 1886 :

MOVEMENT OF THE CROP.

	WEEK ENDING DEC. 31.		PREVIOUS WEEK.		SINCE FIRST OF SEASON.	
	Barrels.	Crates.	Barrels.	Crates.	Barrels.	Crates.
RECEIPTS AT NEW YORK.						
New Jersey Southern Railroad		532		1,399	7	20,391
Pennsylvania Railroad.....			8	511	10	4,468
Fall River Line.....	283	29	516	106	38,599	8,967
Stonington Line.....					176	
Norwich Line.....	65		175	3	1,307	198
Long Island Railroad.....		80			753	2,303
Philadelphia & Reading Railroad.....		14		227	150	7,313
Providence Line.....						
New Bedford Line.....						
Erie Railroad.....					34	
Totals.....	348	655	699	2,296	41,036	43,840
RECEIPTS AT PHILADELPHIA.						
*Penna. R. R. (Amboy Div.).....	124	1,722			775	18,067
*Camden & Atlantic Railroad.....	94	3,721			428	14,202
*West Jersey Railroad.....	24	619			306	10,484
P. & A. C. Railroad.....		185		2,475		23,400
Fall River Line via New York.....	12		40		2,649	346
Totals.....	254	6,247	40	2,475	4,158	66,499
RECEIPTS AT BOSTON.						
Old Colony Railroad.....	149	29	166	36	16,122	3,002
SHIPMENTS FROM COUNTRY STATIONS DIRECTLY WEST.						
From New Jersey.....	178	401			700	7,568
From New England.....			172		2,885	422
From Long Island.....						
Totals.....	178	401	172		3,585	7,990
† RECEIPTS AT CHICAGO.						
C., M. & St. P. R. R.....			208		49,209	953
C. & N. W. R. R.....					15,981	1,801
Totals			208		65,190	2,754

*Two weeks. †Week ending Dec. 30th.

From this table it appears that by calculating barrels at three bushels and crates at one bushel, the reported receipts at New York from New Jersey by the New Jersey Southern, the Penna., and the P. & R. roads, from commencement of season to December 31st, 1885,

have been 32,673 bushels, to which add, say 3,000 for receipts not reported, and we have 35,673, against 20,464 to same date in 1884 and 28,671 in 1883.

The reported receipts at Philadelphia from New Jersey by the Penna., C. & A., W. J. and P. & A. C. roads, amount to 70,680, to which add, say 5,000 for receipts not reported, and we have 75,680 bushels, against 30,656 in 1884 and 58,882 in 1883.

The reported shipments from New Jersey directly West have been 9,668, against 50,472 to same time in 1884 and 6,425 in 1883.

The movement of the New Jersey crop to December 31st, 1885, has therefore been—

	Bushels.
To New York.....	35,678
To Philadelphia.....	75,680
To the West.....	9,660
To home market, estimated.....	6,000
Total	127,021

This movement, deducted from the October estimate of the crop, indicates 109,810 bushels still in the hands of growers.

The movement of the New England crop reported and estimated has been as follows :

	Reported.	Estimated.	Total.
To New York.....	124,764	10,000	134,764
To Boston.....	51,368	10,000	61,368
To Philadelphia.....	8,298	10,000	18,298
To West direct.....	9,077	.....	9,077
To other N. E. markets, say .....	.....	.....	10,000
Total.....			233,502

which, taken from the October estimate, leaves 171,355 bushels apparently unmoved. This is proportionally as great as the apparently unmoved stock in New Jersey, and both *seem* nearly incredible.

The reported receipts at Chicago from Wisconsin amount to 198,224 bushels, which it is thought cannot exceed three-fourths of the actual movement. This would make the amount moved 264,298 bushels, and as compared with October estimate, indicates 57,881 still left in that State.

The foregoing may be condensed as follows :

From	Movement reported.	Additional movement estimated.	Total to Jan. 1st.	Oct. crop estimate.	Apparently unmoved.
New Jersey.....	113,021	14,000	127,021	236,831	109,810
New England.....	193,502	40,000	233,502	404,857	171,355
Wisconsin.....	198,224	66,074	264,298	322,179	57,881
Totals	504,747	120,074	624,821	963,867	339,046

From this it may be seen that the crop movement to January 1st, reported by the principal railroads carrying this fruit, is some 14,000 bushels more than the largest crop on record, while the estimated movement not thus reported is over 120,000 bushels, making the entire movement about two-thirds of the October estimated crop, and leaving about one-third still in the hands of the growers.

The October estimates have, heretofore, fairly indicated the size of the crop, and it is possible the last one is equally correct. But the amount apparently on hand staggers belief.

THE COURSE OF TRADE.

The first number of the *Bulletin* for this season was issued September 26th, and its quotation for Cape Cod Fancy, per bbl., was \$7.50 @ \$8.00.

Higher figures had previously been reached for a few of the first in market of the highest grade of Early Blacks.

Prices soon dropped to \$6.50 @ \$7.00, and, with slight fluctuations, gradually declined until \$6.00 @ \$6.50 was seldom exceeded in the last week of November.

New Jersey cranberries opened in New York nominally at about \$1.75 per crate for the best, but fine Cape Cod fruit, mostly "Early Blacks," had possession of the market, nearly to the exclusion of Jersey crates, until the end of October.

In November they were crowded upon the market, and some of the best were sold in the range of \$1.50 to \$1.70 per crate, some small sales being occasionally made at better figures, while many lots that were off in quality or filling, or in undersized crates, remained on hand, or were forced to sale at much lower figures.

In anticipation of a dull market after Thanksgiving, or from some other cause, the receipts immediately following that holiday were greatly diminished. At the same price an active home and shipping

demand occurred. Prices were advanced on fancy Cape Cod fruit about fifty cents per barrel.

Much encouragement was felt at this time, and cranberry growers, both in New Jersey and New England, made haste to take advantage of the better outlook. A flood succeeded the waning tide, and the demand simultaneously fell off. The dullness increased during the last half of December, and no revival has since occurred. Old commission merchants in New York have been so apprehensive of accumulated stock of New Jersey cranberries, that they have as diligently striven to prevent consignments as they had heretofore sought for them. In spite of this caution, many of them are now burdened with stocks much heavier than usual at this season of the year, while there are a great many Jersey cranberries scattered about the city, in the hands of dealers not heretofore conspicuous in this line of trade.

Prices have averaged in New York, from the commencement to the middle of January, very much lower than ever before, and are now at the lowest point of the season—indeed, if opportunity occurred to sell any considerable quantity, the price could scarcely stand in the way.

That low prices largely increase the consumption of cranberries is evinced by the fact that more than double the entire amount of the crop of 1884 has this season already gone to market, a large proportion of which has been sold. But it seems to be still an open question whether any reduction in price can insure the consumption of a crop apparently three times as large as the crop of 1884, and double that of the largest previous crop.

At the commencement the Fruit Growers' Trade Company looked upon this great crop and the inevitable low prices as an opportunity for a largely increased export trade. They had, several years ago, when prices were low, succeeded in exporting nearly 2,000 crates without loss, and hoped to more than double that small figure the present season.

Shipments were made to Liverpool, London, Glasgow and Birmingham.

The first reports were very favorable, and increased shipments were hurried forward, but soon there was a peremptory cable message with one word, "Stop!"

The upshot of the whole business is that about 1,200 crates seem to have glutted the entire United Kingdom, and are likely to bring loss upon the company.

At Dresden, Saxony, there are so many resident Americans that a grocer who caters for them gives us an order every fall for a small lot of cranberries and cranberry sauce. When filling this order last fall, we concluded to venture by the same ship a consignment of 25 crates to Hamburg. In due time our consignee advised that he had offered the fruit for sale, and the best bid he could get was 4s. per crate, which he declined, and sent the lot to Liverpool, where he noticed they were quoted at 10s., and where they were finally sold at 8s. The Hamburg man generously remitted the entire net proceeds without commission to himself. He favored us with information as follows: "Only small cranberries are used here, at a cost of 12s. to 15s. per cwt., and sold in large quantities, coming from Sweden and Norway and those quarters chiefly; also plenty grown here."

Apparently the persistent efforts of the last ten years to introduce cranberries abroad have had very little effect, beyond what Americans across the sea require.

The *Cranberry Bulletin* has thus far this season carried very little encouraging news to its patrons, and I am sorry to be obliged to make the tone of this report equally doleful.

Some one has said, with an air of wisdom, "that no man's life should be considered a failure until he is dead."

Let us hope that the current cranberry season will seem less a failure at the end than at present.

To deprecate a bountiful harvest seems impious, but we may well regret the inability of man to buy at remunerative rates and consume for his own best good all that is produced.

The trouble is not over-production, but under-consumption; it is the old unsolved problem of how to get the superabundant shirts and the shirtless backs together.

But I had better stop before I get into questions of political economy or the ethics of trade.

The usual continuous tables are annexed.

TABLES.

The early estimates of the cranberry crop of the country, for thirteen years, are shown in the following table in bushels:

New Jersey.....	100,000	110,000	90,000	110,000	90,000	152,108	60,000
Western States.....	185,000	60,000	50,000	40,000	40,000	79,500	107,769
New York.....			5,000	5,000	8,000	5,000	8,000
Totals.....	275,000	275,000	250,000	230,000	198,000	400,828	295,760

	1879.	1880.	1881.	1882.	1883.	1884.	1885.
New England.....	165,000	247,500	165,825	191,664	141,964	130,588	225,000
New Jersey.....	90,000	128,700	187,014	78,507	119,524	124,648	175,000
Western States.....	75,000	113,430	143,186	50,000	135,507	24,783	160,000
New York.....	3,000	3,000	5,000	2,000			
Totals.....	233,000	492,630	461,025	322,171	442,207	330,000	560,000

A table showing the opening and closing prices of New Jersey cranberries, in bushel crates, at New York, for thirteen consecutive seasons, commencing with 1870 :

1870. September.....	\$3.50 @ \$4.00	1879. September.....	\$1.75 @ \$2.00
May, '71.....	1.00 @ 1.25	May, '80.....	5.00 @ 6.00
1871. September.....	3.25 @ 4.00	1880. September.....	1.50 @ 2.00
May, '72.....	4.50 @ 5.50	May, '81.....	50 @ 1.00
1872. September.....	3.25 @ 4.00	1881. September.....	1.50 @ 2.00
May, '73.....	1.50 @ 2.00	January, '82.....	3.50 @ 4.00
1873. September.....	2.50 @ 3.00	May, '82.....	2.00 @ 3.00
April, '74.....	4.75 @ 5.00	1882. October 1st.....	2.75 @ 3.00
1874. September.....	2.75 @ 3.00	1883. January 1st.....	4.00 @ 4.50
May, '75.....	1.75 @ 2.00	April.....	2.00 @ 3.50
1875. September.....	2.00 @ 2.75	October 1st.....	2.75 @ 3.00
May, '76.....	4.75 @ 5.00	1884. January 1st.....	3.50 @ 3.75
1876. September.....	3.25 @ 3.50	April.....	5.25 @ 5.50
May, '77.....	2.00 nom.	October 1st.....	2.75 @ 3.00
1877. September.....	2.00 @ 2.50	1885. January 1st.....	4.50 @ 4.75
May, '78.....	4.00	May 1st.....	2.50 @ 2.75
1878. September.....	2.00 @ 2.25	October 1st.....	1.50 @ 1.70
May, '79.....	2.25 @ 2.50	1886. January 1st.....	1.20 @ 1.40

January 18th, 1886.

N. R. FRENCH.

On motion, the expense of obtaining from railroad and transportation companies statistics of the movement of the crop was ordered discontinued.

On motion, it was resolved to hold a special meeting of the Association on the third Tuesday in October, at such place as the Executive Committee shall select.

The following communication was read and ordered printed :

ST. JOSEPH, MICH., Jan. 11th, 1880.

Secretary New Jersey Cranberry Growers' Association :

DEAR SIR—I feel quite reluctant to present another paper to this Society, from the fact that I volunteered one a few years ago, and have but few new ideas to present at this time. But possibly some may be present at this time who were not before, or perhaps the subject may have more interest now than when cranberries were readily selling at \$10.00 to \$15.00 per barrel. So I will briefly give a few thoughts for your consideration.

This year's crop of cranberries and present prices are what I have expected for several years. And the fact is, that this year's crop, large as it has been, is not a full crop from all the cranberry-growing sections by any means, nor as large as we may expect in the near future. The very large new plantations that are only just beginning to produce in Wisconsin, the increase in acreage on Cape Cod and in other parts of Massachusetts, and, also, the quite extensive tracts being improved in Michigan and Indiana, are very sure to raise the average crops to much larger amounts than we have ever yet seen, in the near future. I do not think it will be long before our esteemed Statistician will report crops of a *full million* of bushels to be offered on our markets in a single year.

In view of this prospect and the present facts, will not this Association at this time take some very energetic steps towards opening *new outlets* for the surplus of our crops in foreign lands.

I have been told that *some efforts* have been made, and that a *few berries* have been sent to Liverpool and London and sold, but that prices realized have been unsatisfactory, and the demand has grown very slowly.

But, from all I can learn, no such *energetic, thorough efforts* have been made as would be necessary to introduce a *new mowing machine*, nor such as have been made to introduce other *special food products* of American origin, nor such as would be made if the whole cranberry product was controlled by a monopoly of one or two companies of enterprising men, who would wish to get the most possible from the total product.

I claim that the only true way to build up a foreign demand for

adapted to the business, and send them over to make a personal special effort, just as would be done by the *inventors* or *manufacturers* of a new *mowing machine*, and to send them in force sufficient to thoroughly canvass that market, and to study the special features necessary to gain that market, and how best to get before the people.

I have been recently told that the sale of American apples in Europe could be immensely increased by intelligent *American trade methods*, and this from an *experienced* and *intelligent* dealer, who fully concurred in my opinions as to the necessary manner of introducing the American cranberry.

The business needs intelligent study *on the ground*, by personal representatives, who will study how and what system is the best to get the people to using this fruit, as it is used in this country. Even *here*, I am told by retailers that the fruit needs to be kept in *sight*, where every one who enters the store will see them; and my own experiment, of furnishing retailers with attractive show cards and a neat circular of directions for cooking, I am told, is quite effective in increasing the retail sales. The English green grocer is usually a very small shop-keeper, and only buys a small amount at a time, and would rarely buy so large an amount at once as a *barrel* of cranberries—even a bushel would seem a large venture to most of them.

The English people consume large amounts of currants, gooseberries and apples, and, there is no doubt, would use a great many cranberries, if they were properly introduced. But it will require *energetic personal* effort to do it, by men determined to succeed. And the same is true of *Germany* and *France*.

It will require some study to get up printed directions for preparing them in a manner to suit the tastes and customs of these people, and such directions, with attractive show cards, should be plentifully supplied with every package.

When we see what horrible stuff is furnished by many of our hotels and restaurants, called *cranberry sauce*, we cannot wonder that, away from home, but few should learn, unaided, how to prepare them so they will be attractive and win purchasers.

To sum up, then, in a few words: "Let enough of the largest growers combine, to send two or more of the very best men to be found, to make a *systematic, thorough, personal* effort for a whole season—to work up a sale by all possible methods; giving away, when

necessary, to editors and others; getting recommendations from doctors as to healthfulness of the fruit as diet; giving personal instruction to have them properly cooked, in leading hotels and restaurants, and having them so *widely* and *generally* exposed for sale as to familiarize the people with their use."

In this way I feel assured that a yearly demand can be made in the future for thousands of barrels, where now the name of the American cranberry is unknown.

I would suggest to this Association a committee to make efforts to see how many could be induced to join in a combination to make such an effort as I have suggested. I would suggest a committee of Cape Cod and New Jersey growers; and after seeing what can be done among the Eastern growers, that one or more of such committee come West and work up an interest among Western growers.

I, myself, will help what I can, but from the pressure of my other business, and the smallness of my cranberry interest, I cannot do a great deal, but will help to introduce the idea to many of the growers I am personally acquainted with, and, perhaps, could assist any one who was to go on this errand, from my experience in other lines in European countries.

Respectfully submitted,

S. H. COMINGS.

On motion, Mr. Comings was added to the Foreign Trade Committee.

The following communication was read and ordered printed :

THE WILD CRANBERRY CROP OF WISCONSIN.

A peculiar feature of the cranberry interest in Wisconsin is our spontaneous or wild crop.

The cranberry vine is found over an immense area in this State in its native condition.

We find them along the highways, where the ground is moist; they encroach upon the low-land pastures. Last season I saw quite a crop of berries on the damp portion of a field that had been plowed and seeded to red-top and timothy.

Our low, sandy soil here in Wisconsin seems equally adapted to the growth of cranberry vines with our extensive peat marshes. Once in

freezing early in the spring when the snow goes off, usually killing them to the ground, and, of course, prevents fruiting for that season.

These wild, unprotected vines are also preyed upon by injurious insects.

It takes a series of about three favorable seasons to grow vines sufficient to raise a wild crop of sufficient magnitude to affect the market, the same as has been done this season.

These favorable seasons follow occasionally, but fortunately at long intervals, for the legitimate cultivators of the vines.

Along the right of way, the past season, on our railroads, in some places the ground was, last fall, red with berries, and the section hands who repair the track, in some cases, left the employ of the road and earned \$10 to \$15 per day raking berries and selling them at \$5 per barrel.

It is fortunate for growers that climatic conditions of Wisconsin do not favor the development of a large spontaneous crop only at long intervals. For the wild berry is certainly a factor in our markets, and has a leveling effect on the prices of cultivated fruit. We should look upon insects that prey upon the fruit and vines, and upon the frosts of spring and fall, that often cut off the unprotected crop, as friends instead of enemies to scientific and thorough cranberry culture.

The majority of our so-called cultivated cranberry marshes in Wisconsin are simply natural bogs, with proper drainage and dams for flowage, thus merely assisting the native vines to overcome the grass, moss and other growth found native on the bog.

These berries, in the main, are but a little better than the wild berries, so called.

Of late years a good deal scalping has been done—removing the soil and resetting; but little attention has been given to securing choice varieties of fruit.

A large-sized, fancy berry sells here in market at \$2.50 to \$3 more than the average Wisconsin fruit, and it is apparent that fine fruit will pay the cost of harvesting and marketing over the common stock, so that when we reach the point, if ever we do, that common berries are not worth harvesting, choice fruit will still pay a profit.

I have a marsh of twenty acres, made by simply leveling a high,

dry field or pool, sandy land and irrigating with a small trout stream. The land is as poor as pure beach-sand, without a trace of vegetable loam, apparently, except what the water has deposited, or formed from the decaying leaves of the vines. This little yard is a perfect success, has been in operation for thirteen years, averages 180 bushels of berries per acre, and is the only thing of the kind here in the West.

For Wisconsin we look for a continued interest in cranberry culture, and more thorough methods and an intelligent cultivation.

The Wisconsin Dairymen's Association holds its meetings several times a year, sometimes in other States adjoining. How would it do for the American Cranberry Growers' Association to hold a special summer meeting in Wisconsin, and so increase its influence and membership?

L. G. KNIFFEN,
Milwaukee, Wis.

An estimate was taken of the amount of fruit remaining in the hands of growers, which aggregated 45,125 bushels.

Adjourned.

A. J. RIDER, *Secretary*,
Trenton, N. J.

STATE GRANGE OF NEW JERSEY,
PATRONS OF HUSBANDRY.

STATE GRANGE OF NEW JERSEY.

OFFICERS:

Master	RICHMAN COLES.....	Woodstown, Salem county.
Overseer.....	JOHN STATESIE, JR.....	Colts Neck, Monmouth county.
Lecturer	MORTIMER WHITEHEAD.....	Middlebush, Middlesex county.
Steward.....	HENRY F. BODINE.....	Locktown, Hunterdon county.
Assistant Steward	GEORGE H. GAUNT.....	Paulsboro, Gloucester county.
Chaplain	CHARLES SHOEMAKER.....	Mantua, Gloucester county.
Treasurer	C. A. RULON.....	Swedesboro, Gloucester county.
Secretary	M. D. DICKINSON.....	Woodstown, Salem county.
Gate Keeper.....	E. E. HOLCOMBE.....	Lambertville, Hunterdon county.
Ceres.....	LYDIA D. COLES	Woodstown, Salem county.
Pomona.....	MAY J. WHITEHEAD.....	Middlebush, Middlesex county.
Flora	ETTIE A. JESSUP.....	Cinnaminson, Burlington county.
Lady Assistant Steward.....	HANNAH C. HOLCOMBE.....	Lambertville, Hunterdon county.

EXECUTIVE COMMITTEE:

RICHMAN COLES.....	Woodstown, Salem county.
JAMES H. BAIRD.....	Marlboro, Monmouth county.
ROBERT TAYLOR.....	Columbus, Burlington county.
JOHN T. COX.....	Readington, Hunterdon county.
I. W. NICHOLSON.....	Camden, Camden county.

LIST OF DEPUTIES FOR 1886.

Burlington county.....	D. T. HAINES.....	Medford, Burlington.
Camden county.....	AMOS EBERT.....	Ashland, Camden.
Cumberland county.....	J. C. BOWEN.....	Shiloh, Cumberland.
Essex and Sussex counties.....	R. F. HARRISON.....	Livingston, Essex.
Gloucester county.....	MATTHEW ALLEN.....	Jefferson, Gloucester.
Hunterdon county.....	J. T. COX.....	Readington, Hunterdon.
Monmouth county.....	JOHN STATESIE, JR.....	Colts Neck, Monmouth.
Salem county.....	EMPSON ATKINSON.....	Woodstown, Salem.
Mercer county.....	THEODORE CUBBERLY.....	Hamilton, Mercer.

LIST OF MASTERS AND SECRETARIES, WITH THEIR POST OFFICE ADDRESSES, OF THE SUBORDINATE GRANGES OF NEW JERSEY.

Number.	NAME.	MASTERS	P. O. ADDRESS.	SECRETARIES.	P. O. ADDRESS
2	Marl Ridge.	B. A. Morton.....	New Egypt, Ocean county.....	F. S. Gaskill.....	New Egypt, Ocean county.
5	Swedesboro.....	Henry Pancoast.....	Swedesboro, Gloucester county.....	Jennie L. Moore.....	Swedesboro, Gloucester county.
8	Moorestown.....	George S. Gillingham.....	Moorestown, Burlington county.....	Kate B. Lippincott.....	Harford, Burlington county.
9	Woodstown.....	T. B. Moore.....	Woodstown, Salem county.....	George H. Kirby.....	Woodstown, Salem county.
10	Paulsboro.....	H. R. Ingalls.....	Vineland, Cumberland county.....	Mary H. Lee.....	Vineland, Cumberland county.
11	Vineland.....	E. E. Holcombe.....	Mt. Airy, Hunterdon county.....	F. S. Holcombe.....	Mt. Airy, Hunterdon county.
12	Ringoes.....	Nathan S. Wright.....	Burlington, Burlington county.....	William S. Taylor.....	Burlington, Burlington county.
14	Edgewood.....	Daniel W. Davis.....	Shiloh, Cumberland county.....	J. L. Mickle.....	Shiloh, Cumberland county.
16	Hopewell.....	John Tyler, Jr.....	Greenwich, Cumberland county.....	Morris Goodwin.....	Greenwich, Cumberland county.
18	Cumberland.....	E. J. Osler.....	Merchantville, Camden county.....	Franklin Horner.....	Parry P. O., Burlington county.
24	Union.....	Paul Avis.....	Harrisonville, Gloucester county.....	Hannah Ann Moore.....	Harrisonville, Gloucester county.
26	Harrisonville.....	F. B. Rulon.....	Swedesboro, Gloucester county.....	D. R. Black.....	Swedesboro, Gloucester county.
32	Bridgeport.....	Samuel G. Prickett.....	Medford, Burlington county.....	Phebe Ann Phillips.....	Medford, Burlington county.
36	Medford.....	James Lippincott.....	Julistown, Burlington county.....	Henry Ellis.....	Julistown, Burlington county.
37	Mt. Holly.....	R. Lewis Shivers.....	Ashtand, Camden county.....	Horace M. Ebert.....	Ashtand, Camden county.
38	Haddon.....	Joseph Noblet.....	Wenonah, Gloucester county.....	Mary G. Duell.....	Wenonah, Gloucester county.
39	Mantua.....	Franklin Dye.....	Lawrenceville, Mercer county.....	Charles Smith.....	Lawrenceville, Mercer county.
40	Lawrence.....	D. W. Padgett.....	Bridgeton, Cumberland county.....	William B. Cook.....	Bridgeton, Cumberland county.
43	Hope.....	Wilson L. Justice.....	Pedricktown, Salem county.....	Hubert B. Shoemaker.....	Pedricktown, Salem county.
46	Pedricktown.....	Joseph Lundy.....	Rancocas, Burlington county.....	Uriah Borton.....	Burlington, Burlington county.
49	Rancocas.....	Joseph S. Carter.....	Mullica Hill, Gloucester county.....	Warren Atkinson.....	Mullica Hill, Gloucester county.
50	Pemberton.....	W. H. Opie.....	Readington, Hunterdon county.....	John T. Cox.....	Readington, Hunterdon county.
51	Mullica Hill.....	Thomas A. Keeler.....	Columbus, Burlington county.....	Robert Taylor.....	Columbus, Burlington county.
56	Readington.....	T. Newton Steward.....	Sharptown, Salem county.....	Henry Gardiner.....	Sharptown, Salem county.
57	Centre Grove.....	David C. Rulon.....	Crosswicks, Burlington county.....	Elizabeth A. Rogers.....	Crosswicks, Burlington county.
58	Columbus.....				
60	Courses Landing.....				
61	Crosswicks.....				
64	Pennington.....				

LIST OF MASTERS AND SECRETARIES, WITH THEIR POST OFFICE ADDRESSES—Continued.

Number.	NAME.	MASTERS.	P. O. ADDRESS.	SECRETARIES.	P. O. ADDRESS.
73	Ewing	J. V. Green.....	Wilburtha, Mercer county.....	Wallace Lanning.....	Ewingville, Mercer county.
77	Mercer	Ralph Ege.....	Hopewell, Mercer county.....	.....	Hopewell, Mercer county.
79	Hamilton.....	Theo. Cubberly.....	Hamilton Square, Mercer county.....	.....	Hamilton Square, Mercer county.
81	Friesburg.....	Charles F. Dickinson	Cohansey, Cumberland county.....	.....	Alloway, Salem county.
85	Williamstown.....	C. F. Tice.....	Williamstown, Gloucester county.....	.....	.....
87	South Vineland.....	N. H. Stephens	South Vineland, Cumberland county.....	William Russel.....	.....
88	Locktown	Uriah Sutton.....	Locktown, Hunterdon county.....	Isaac H. Hoffman.....	.....
90	Blackwood	John M. Stetser.....	Chewa Landing, Camden county.....	Theo. Hider.....	.....
92	Monmouth.....	John Stetser.....	Colts Neck, Monmouth county.....	James H. Baird.....	.....
98	Allentown .....	.....	.....	.....	.....
99	Holmdel	Milton Smock.....	Wickatunk, Monmouth county.....	S. B. Wells.....	Bradevelt, Monmouth county
101	Sergeantville.....	John H. Hartpence.....	.....	Judson Rittenhouse	Sergeantville, Hunterdon county.
104	Livingston	H. F. Harrison.....	Roseland, Essex county.....	W. W. Burnette.....	.....
106	Kingwood	M. F. Kugler.....	Tumble, Hunterdon county.....	J. H. Stull.....	Kingwood, Hunterdon county.
107	Caldwell	Milton H. Canfield.....	Caldwell, Essex county.....	Franklin J. Wilson.....	Verona, Essex county.

POMONA GRANGES.

Number.	NAME.	MASTERS.	SECRETARIES.	P. O. ADDRESS.
1	Burlington Co.....	George L. Gillingham.....	Edmund Braddock.....	Medford, Burlington county.
3	Hunterdon Co.....	David Bodine.....	F. S. Holcombe.....	Mt. Airy, Hunterdon county
4	Cumberland Co.....	.....	.....	.....
5	Mercer Co.....	Theo. Cubberly.....	George W. Johnston.....	Trenton, Mercer county.
6	Salem Co.....	E. L. Borton.....	E. Atkinson	Woodstown, Salem county.
7	Camden Co.....	.....	.....	.....

REPORT OF STATE GRANGE OF NEW JERSEY.

BY RICHMAN COLES, OF WOODSTOWN.

MR. PRESIDENT AND GENTLEMEN OF THE STATE BOARD OF AGRICULTURE—We have met together to-day in the capital city of our State, under the law organizing this body, and for the purpose of consulting together as to the best means of conducting some of the many interests relating to agriculture. I say some, because the term agriculture extends over so broad a field that to attempt to discuss all its many branches would prolong this session into weeks instead of days.

Is it not, then, desirable that farmers should meet more frequently together for the purpose of consulting as to the best means of conducting the different parts of their varied industry? The horse, with his many diseases; the dairy interest, sheep husbandry, the hog, poultry, bee keeping, the rotation of crops, the raising of truck, market gardening, the use of fertilizers, the growing of fruits and berries, &c., all claim his attention.

For the purpose of meeting this necessity was organized the order of Patrons of Husbandry. Although the National Grange of Patrons of Husbandry has entered into the twentieth year of its existence, yet there is, perhaps, no order, organization or society in existence, aiming for the general good, of which so little is known by the people at large; or the principles, aims and objects of which are so generally misunderstood.

Then, as this organization was founded with the view of enlightening the farmer, and for the purpose of binding more closely together, for their advancement, those engaged in that calling, it may not seem out of place to occupy a few minutes of the time of our meeting in considering the causes which led to its organization, the principles on

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which it was founded, the trials and discouragements it has encountered, together with some of the achievements it has performed.

The founders of the order are well known, and, with one exception, are still living.

In January, 1866, Mr. O. S. Kelly, one of the clerks of the Agricultural Department, at Washington, was sent on a journey through the South and West for the purpose of obtaining some statistical information that, owing to the disorganized condition of the country, could not be obtained by the usual custom. In his travels, which occupied nearly four months, he, for consultation, sought out the leading agriculturists of the sections of country through which he passed. His intercourse with those farmers, and seeing their helpless condition, turned his quick mind into a train of thought. On the one hand, he saw the commercial, the manufacturing, banking, mining and railroad interests all thoroughly organized and co-operating together, influencing and moulding legislation, and receiving more than their just shares of the wealth produced by the husbandman. On the other hand, he saw those engaged in agriculture, which, at that time, embraced more than one-half of the whole population, unorganized and powerless before them.

Having returned to his post of duty in the department, the convictions that had been forced upon him during his travels still kept uppermost in his mind, viz.: that farmers needed organization.

He knew that, with very few exceptions, agricultural clubs had been short-lived and ineffectual. Also, that State and county fairs, although answering a certain purpose, were seldom controlled by farmers.

He communicated his ideas to others of his acquaintance, some of whom embraced his views and formed a band, seven in all, who, on December 4th, 1867, organized a National Grange at Washington, D. C. For four successive years those seven met in annual session. At the fifth annual session, Dudley W. Adams, of Iowa, was added to the original number. At the sixth, which met in Georgetown, January, 1873, eleven States were represented, they reporting the existence of more than 1,300 subordinate Granges.

In the years of 1873 and 1874 more than 20,000 subordinate Granges were formed throughout the States. In February, 1874, the National Grange met in St. Louis and issued its declaration of purposes, a part of which are as follows:

resolve to labor for the good of our order, our country and mankind.

We heartily indorse the motto: "In essentials, unity; in non-essentials, liberty; in all things, charity." To develop a better and higher manhood and womanhood among ourselves; to enhance the comforts and attraction of our homes; to strengthen our attachment to our pursuits. At the same time they declared it to be their purpose to wage no warfare upon any other interest; to advance the cause of education by all means within their power; to destroy, as far as possible, the then existing spirit of sectionalism, and to give a proper appreciation to the abilities and sphere of woman.

At that session thirty-two States were represented. The order had suddenly become strong and powerful, and from that strength came its weakness. The gates of entrance had not been properly guarded, and allowed those to creep in whose presence was detrimental to the good of the order. Lawyers, doctors, merchants, bankers and other business men rushed to the gates seeking admission.

After a time a reaction commenced; those who had thus come into the order, finding they could not control it to their especial advantage, left it, but, in the meantime, using their utmost endeavors to demoralize its ranks, and in some sections succeeding in entirely destroying its usefulness.

Unfortunately for the order in its early history the impression went out that its chief mission was to war with railroads, denounce business men and antagonize many of the leading interests of our country; but time is fast removing those wrong impressions from the minds of the people. One of the principles of our order is that we wage no warfare upon any other business interest whatever; we simply object to the abuse of their privileges. It is true that the great farmers of the Northwest, who had mortgaged their farms to build railroads, with the expectation of being benefited thereby, found to their disappointment their stocks absorbed and the controlling of the railroad passing out of their hands. Then was established a system of freight charges that were ruinous to agriculture. They then broke loose from party ties and elected men favoring their own interests, who passed laws breaking up this system of spoliation in these charges.

That there should be some action taken by Congress for the regulation of interstate commerce, and thereby prevent unjust discrimination in traffic, is the opinion not only of Patrons of Husbandry but of a

majority of farmers and business men as well. Twice have bills of that nature been passed by the lower House of Congress, but both of them have been defeated by the Senate. A Senate committee was then appointed for the purpose of collecting information on the subject during the recess of Congress. They held meetings in different sections of the country to hear the opinions of railroad officials and business men who were invited to appear before them. They also issued a circular letter which they sent out to many who were remote from their places of meeting. As far as has been ascertained this letter was sent to the Master of every State Grange in the Union. In it was embraced fifteen separate and distinct questions. The answers given by J. J. Woodman, of Michigan, Master of the National Grange, have in his annual address been made public and should be carefully read not only by farmers but by every one who feels an interest in the prosperity of the whole country. I state these facts merely for the purpose of showing you that the Grange has become so national in its character, and the views of its leaders on the important questions of the day, while they require profound thought, yet they are given in so plain and concise a manner as to attract the attention of those seeking information in the affairs of the nation.

But it is perhaps as an educator of the people, that the Grange has been the most successful. I would not have you think this education is simply knowledge derived from our text-books; but education in the Grange is of a practical character, and includes knowledge gathered from every source; that which originates thought, develops ideas and elevates every one who comes within its limits. Grange libraries are becoming very common and add much to the interest of our order. Most towns of importance have a circulating library, but the farmer, who lives isolated, is deprived of this benefit, and the Grange library in part supplies its place and makes up to his family that which he may not be able to provide. The word family is here used, for the member who does not at least endeavor to induce his wife and children to become members of the order, is rarely a good patron.

The admission of women has done much toward ennobling and extending the influence of the order, besides elevating as well as widening her round of occupation. It takes her from the routine of daily toil and infuses her with new ideas, developing her mind and drawing out the latent powers within her. The farmer who, once

and children to a cozy Grange hall, and then meet in social gathering, varying the exercises of the evening so as to include music and literary exercises as well as discussions on various topics of the farm and household, confers a favor upon them such as he could in no other way.

The reason of agriculture clubs being a failure, is because woman has been excluded from membership; and Granges whose gatherings are not graced by her presence, and cheered by her words of counsel, are irregular in their meeting and careless in their work.

In conclusion: At the last meeting of the National Grange, held in Boston, in November, 1885, representatives were present from thirty-two States, who reported the existence of twenty-four thousand (24,000) subordinate Granges. The majority of Granges in this State meet weekly, and one reported 52 meetings within the year, with an average attendance of 53 members.

In such an assemblage, properly conducted, what a grand opportunity for acquiring knowledge, and it is an old and true saying that knowledge is power; and that in the rough and tumble of everyday life brains have always ruled the physical man and always will.

One of our lecturers has said that this system of education will make readers, and readers will make thinkers, and thinkers are what the farmers of the country need to-day; and, also, out of mere farmers in country neighborhoods, good speakers, writers and thinkers have been developed through Grange education, who are capable of filling any position in life.

The Grange principles, then, are to develop a better and higher manhood and womanhood; to enhance the attractions and comforts of our homes; to study all questions of political economy; to encourage purer elections; to be bound by principles rather than by party ties.

I would recommend them to you for your thought and consideration, not only occupying a short time in this meeting, but, as you desire the advancement of your calling; as you desire those thus engaged shall occupy a higher social status in society: take them to your fireside, read them, study them, give them your careful attention, and then, whether within the Grange or without its gates, let them govern your actions.

Agricultural and Horticultural Societies.

Officers, Exhibition, Society and Crop Reports.

ATLANTIC COUNTY.

EGG HARBOR CITY AGRICULTURAL SOCIETY.

(Organized March 23d, 1859.)

OFFICERS FOR 1886.

<i>President</i>	PHILIP STEIGAUF.....	Egg Harbor City.
<i>Vice-President</i>	JOHN C. BLAAKE	Egg Harbor City.
<i>Secretary</i>	VALENTINE P. HOFMANN.....	Egg Harbor City.
<i>Treasurer</i>	WILLIAM BEHNS.....	Egg Harbor City.
<i>Librarian</i>	LOUIS YOUNG.....	Egg Harbor City.

BOARD OF TRUSTEES.

FREDERICK FIEDLER, CHARLES DIHLMANN, HENRY HAMBACHER.

Delegate to State Board.....V. P. HOFMANN.

The Society has at present seventy-two members.

The annual fair will be held at Egg Harbor City the third or fourth week in September.

EGG HARBOR CITY AGRICULTURAL SOCIETY AND CROP REPORTS.

BY V. P. HOFMANN.

The season 1885 opened with a very late spring, which was followed by a protracted drouth until towards August, when copious and frequent rains set in, continuing at intervals, closing very favorably ; no killing frosts until towards November 20th. Considering the several drawbacks and benefits, we may, in general, pronounce it as a favorable year for agriculture.

Considerable more attention has been given to improvements in

That our sandy soil may return very favorable crops, provided proper manures and fertilizers, and culture be applied, can best be judged of the maximum yields I have ascertained from different parties in this vicinity. Wheat yielded, 34 bushels per acre; rye, 30; corn, 50; potatoes, 180 to 200; sweet potatoes, 220; turnips, 400.

Where six years ago not one acre was planted with garden truck, about 300 acres are now planted with the same. It is transported to Atlantic City, where it finds a remunerative market. Our canning factory, although in its infancy, worked up 150 tons, for which it paid \$7.50 a ton. Yield reported about nine tons per acre.

Apples yielded a moderate crop of not good keeping qualities; pears and quinces, full crop and excellent quality; German prunes, full crop, yield about 2 bushels per tree.

About 300 acres in this vicinity are planted with small fruits, and the acreage extending annually. Strawberries, reported yield from two-thirds acre, 2,400 quarts, prices ranging from 6 to 12 cents a quart. Albany Wilson is considered the most reliable for this neighborhood; Crescent Seedling, Sharpless and Bidwell are other favorable varieties. The new plantations of blackberries suffered considerably during the winter of 1884-5; from one-third to one-half of the canes were killed to the ground; returns noted about 84 bushels per acre; Early Wilson is the main variety, with some Lawtons. Raspberries were considerably injured by the severe winter; Turner and Brandywine as principal varieties; no yield ascertained. One hundred and forty-three thousand and twenty-four quarts of berries were shipped from our two railroad stations to Philadelphia and Atlantic City markets.

Our chief industry is grape raising and manufacture of wines, chiefly clarets. This year's harvest can be estimated at 1,500,000 pounds, of which 60,941 pounds were shipped to market and the balance pressed into wine, so that this year's vintage can be estimated at at least 100,000 gallons; six of the most prominent vintners alone manufacturing 82,840 gallons. As a favorable omen, it may be considered that the grape-rot has been decreasing yearly (with the exception of the Concord, of which about one-fourth crop rotted); there was a full crop of all other varieties. Our grapes are seldom affected with the mildew. The rose bug commits some depredations among the varieties included in the Cordifolios or Riparia class. The principal varieties of the grape grown here, and which are mostly

used in the manufacture of wines, are: Norton's Virginia, Cynthiana, Claevenar, Franklin, Diogenes, Ives' Seedling, Concord, Martha, Venango, Taylor's Bullit and Elvira. Missouri Rieslings are very favorably mentioned among the newer white grapes.

Our vineyards are generally prepared by trenching the soil to the depth of 18 to 24 inches. Manure applied liberally while planting the vines. The vines are planted at various distances, from 5x6 to 7x8 feet, the single stake system being generally in use. White cedar stakes and posts are used to train the vines on. The vines are generally pruned according to the annual renewal system; the cylindrical method is used by some parties with great advantage. The yield per vine varies according to varieties, fertilizers and cultivation, from 4 to 10 pounds. Some parties who have trained theirs on extended trellises realized from 80 to 200 pounds per vine. As to quality of grapes for 1885, on Oechsle's Must Scale, the following results were reported: Concord, varying from 65° to 80°; Clinton, 78°; Norton, 80° to 95°; Cynthiana, 95°; Claevenar, 85°; Martha, 90°; Elvira, 70°. Stable manure and compost is generally applied to the vines. Some few—but not conclusive—experiments with commercial fertilizers have been reported, in which the parties claim larger yields and more immunity from the grape-rot, indicating that our soil is deficient in certain very necessary plant elements to perfect the grape.

The railroad companies having increased the freight rates on fertilizers, it has had a depressing effect upon all farmers in this vicinity, as all are more or less dependent upon outside sources for their supply of manures.

The annual fairs of our Agricultural Society are steadily improving and have been instrumental in demonstrating to unbelievers what choice varieties of field and garden products, fruits and grapes this benighted section of the State is able to produce. The financial condition of the Society is good; at the last fair a surplus of \$381.73 was realized. The indebtedness has decreased, now being \$750. The value of the buildings is \$3,000. Our Society makes it a rule to gratuitously disseminate among its members new and meritorious varieties of fruits, &c.

BURLINGTON COUNTY.

BURLINGTON COUNTY BOARD OF AGRICULTURE.

OFFICERS FOR YEAR 1886.

<i>President</i>	JOHN E. DARNELL.....	Mt. Laurel.
<i>Vice-President</i>	EMMOR ROBERTS.....	Fellowship.
<i>Secretary</i>	HENRY I. BUDD.....	Mt. Holly.
<i>Treasurer</i>	ISAAC FENIMORE.....	Mt. Holly.
<i>Delegates to State Board</i>	{ HENRY I. BUDD.....	Mt. Holly.
	{ JAMES LIPPINCOTT	Mt. Holly.

BOARD OF DIRECTORS.

JOSEPH WILLS.....	Rancocas.....	Burlington Co. Agr'l Society.
SAMUEL C. DE COU.....	Moorestown.....	Moorestown Agr'l Society.
MARK H. BUZBY.....	Masonville.	Mt. Laurel Farmers' Club.
DAVID T. HAINES.....	Medford	Medford Grange.
JAMES LIPPINCOTT.....	Mt. Holly.....	Mt. Holly Grange.
JOSHUA HOLLINSHEAD.....	Hartford.....	Moorestown Grange.
ROBERT TAYLOR.....	Columbus.....	Columbus Grange.
EDWIN SATTERTHWAIT.....	Crosswicks.....	Crosswicks Grange.
JUDSON C. GASKILL	Pemberton.....	Pemberton Grange.
EDMUND COOK.....	Burlington.....	Edgewood Grange.
JOSEPH LUNDY.....	Rancocas	Rancocas Grange.

During the past year there have been but two meetings of this Board. The first one, held at the close of the Summer harvest while the farmers were recreating from their exhausting labors, did not elicit much interest outside of describing the condition of growing crops and stating the probable yields of those then garnered.

The second meeting, held in December, employed its time in electing officers and directors, recording the results of the season's growth, and preparing and passing the following resolutions, which the Secretary was ordered to forward to the State Board of Agriculture for action, also to our Representatives in Congress :

I.

WHEREAS, The extreme low price of pork (which is one of the largest crops of the American farmer) is seriously affecting the profits of agriculture, in this country; *and whereas*, the President in his recent message to Congress says: "I regret to say that the restrictions upon the importation of our pork into France continue, notwithstanding the abundant demonstration of the absence of sanitary danger in its use; but I entertain strong hopes that with a better understanding of the matter this vexatious prohibition will be removed. It would be pleasing to be able to say as much with respect to Germany, Austria, and other countries, where such food products are absolutely excluded, without present prospect of reasonable change;" *and whereas*, the President does not in his message give the information as to the reasons or causes why American pork is absolutely excluded in Germany, Austria, and other countries, leaving us to suspect that in addition to sanitary condition it may be in a manner at least retaliation on account of the duties which we impose on their productions; therefore, *Resolved*, That this Burlington County Board of Agriculture request our Representatives in Congress to make diligent investigation into this matter and to bring about a change that will be to the advantage of our agriculture.

II.

WHEREAS, Contagious diseases, such as pleuro-pneumonia among cattle, cholera and other diseases among swine, exist to such an extent in our midst as to seriously affect the profits of agriculture; *and whereas*, our State laws fail to eradicate these diseases on account of their continual introduction by diseased cattle from other States passing over or resting on our soil; therefore, be it

Resolved, That this Burlington County Board of Agriculture petition our members in National Congress to enact such laws as will, in co-operation with those passed by the different States, prevent the transmission of these diseases from one State to another, and quickly and thoroughly eradicate them from our whole land.

III.

WHEREAS, The prosperity of the country largely depends upon the economical and intelligent administration of its agricultural interests; therefore, be it

Resolved, That this Burlington County Board of Agriculture petition our members in Congress to elevate the office of Commissioner of Agriculture to the dignity of a Cabinet position, to the end that its influence may be commensurate with the importance of agriculture to the life and prosperity of the nation.

BY HENRY I. BUDD.

The blanks for collecting crop reports, prepared and sent forth by your worthy Secretary, distributed by the County Secretaries, although not naming all the varieties of our products, are a great improvement upon former methods.

But the habit of careful observation, and still more the habit of careful record, are qualities so sadly deficient in our average farmer, it is with difficulty full responses can be obtained, and only a few have ventured to give the number of acres devoted to each crop in each district or township, consequently we are forced, in many crops, to be satisfied with percentages instead of number of acres.

However, by these blanks, and from other sources, we will be able to give you a fairly intelligent idea of our farming lands, and the progress and condition of agriculture for the year just ended.

Burlington county is divided into twenty-seven townships, and extends from the Delaware river to the Atlantic ocean; its greatest length, northwest and southeast, is about 52 miles; its greatest width, east and west, 31 miles; its area, 551,553 acres, of which 14,137 acres are bays, inlets, &c.

"The whole county is alluvial, composed of sand, gravel, loam and clay, variously blended." A fertile loam composes the most of the soil for from 14 to 20 miles back from the river and nearly parallel with it.

The balance of the county, full one-half its area, six townships and one-half of four others, is a sandy and gravelly district, extending from the loamy section to the sea-shore, 30 to 40 miles in length. Comparatively little of this portion is cultivated, but mainly covered with short growth of brush, oak and pine, the swamps with maple, gum and cedar. Many of these swamps are cleared and set to cranberry vines; the products of this section are pine and cedar timber, whortleberries and cranberries, the bogs of the latter often very productive.

The four townships lying along the Delaware are a sandy loam, but are highly stimulated for the growth of boiling corn, vegetables, fruits and melons for the Philadelphia and New York markets.

The remaining portion of the loamy district, about 16 townships,

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But few correspondents in this and other crops give the number of acres sown in each township. The growing winter grain looks well and is very promising.

Corn has been one of our largest crops; being a plant that in May and June does not require much moisture, it found at the different stages of its growth nearly all the conditions requisite for perfect development. Acres that for previous years scarcely yielded, on account of thinness of soil, the expense of farming, seemed this year to swell into fatness, showing that climatic conditions often have more relation to successful plant growth than fertile soils. A slight supply of moisture in the early stages, causes the rootlets to search deep and wide for food, while with plenty of moisture the roots run near the surface, where they become the prey of scorching suns, sudden drouths or quick atmospheric changes. Heavy winds in some sections shortened the crop. Acreage, 22 townships, 120 per cent.; yield, compared to last year, 115 per cent.

Rye has been one of the best crops; the straw and grain both very large and fine; acreage 120 per cent.; yield 100 per cent.; price for grain 60 cents per bushel, straw about \$20 per ton; yield of straw $1\frac{1}{2}$ tons; grain 20 bushels per acre; is becoming one of our most profitable cereal crops.

Hay.—On account of the severe drouths of preceding years, grass all over our county was poorly set; this, coupled with the dry weather of May and June, resulted in the smallest hay crop known for years.

The result reported for 10 townships: millet per acre, two tons; timothy, 19 reports, $1\frac{1}{2}$ tons; clover, 18 reports, $1\frac{1}{2}$ tons per acre. The price has ruled about \$20 per ton. There have been favorable conditions, viz.: moist soils; over two tons per acre were grown, making it a profitable crop to the fortunate possessors.

Pasturage in most districts has been short; the increased moisture of July and August very much improved it, but the dry September reduced it below its normal condition.

The low temperature of spring and early summer was, as it always is, favorable to oat and potato growth.

Sweet potatoes and cabbages both scored rather extra crops; the results of all these are given in the regular forms.

Milk supply large, crowding the market the whole season, the price ranged from three and a half to four cents per quart at Camden and Philadelphia. The cost of getting it there, one-half cent per

Pork crop light, cholera decreasing; the low price ruling, \$4 to \$5 per cwt., is inducing the farmers to gradually reduce the number raised and fattened.

CORN.

Yield compared to last year (22 townships)...	115 per cent.
Average yield per acre (23 townships).....	48 bushels.
Number of acres under cultivation (10 townships).....	10,547 acres.
Price per bushel December 1st (21 townships).....	48 cents.

OATS.

Yield compared to last year (18 townships)...	106 per cent.
Average yield per acre (17 townships).....	43 bushels.
Number of acres under cultivation (9 townships).....	2,818 acres.
Price per bushel December 1st (15 townships).....	36 cents.

WHEAT.

Yield compared to last year (22 townships)...	66 per cent.
Average yield per acre (22 townships).....	14 bushels.
Number of acres under cultivation (11 townships).....	7,666 acres.
Price per bushel December 1st (21 townships),	97 cents.

POTATOES.

Yield compared to last year (23 townships)..	90 per cent.
Average yield per acre (21 townships).....	51 barrels.
Number of acres under cultivation (11 townships).....	2,793 acres.
Price per barrel December 1st (19 townships),	\$1.60

SWEET POTATOES.

Yield compared to last year (18 townships)...	100 per cent.
Average yield per acre (15 townships)	40 barrels.
Number of acres under cultivation (11 townships).....	957 acres.
Price per barrel December 1st (17 townships),	\$2.10

CABBAGES.

Yield compared to last year (16 townships)...	133 per cent.
Average yield per acre (14 townships)	3,357 heads.
Number of acres under cultivation (7 townships).....	417 acres.
Price per 100 December 1st (14 townships)...	\$3.37

Crop poor on old trees, good on young ones.	
Yield compared to last year (22 townships)...	64 per cent.
Average yield per acre (12 townships).....	32½ barrels.
Number of acres under cultivation (12 townships)	2,116 acres.
Price per barrel December 1st (17 townships)	\$1.75

PEARS.

Yield compared to last year (16 townships)...	98½ per cent.
Average yield per acre (8 townships).....	92 bushels.
Number of acres under cultivation (8 townships).....	326 acres.
Price per bushel December 1st (10 townships)	\$1.20

PEACHES.

Yield compared to last year (12 townships)...	99 per cent.
Average yield per acre (7 townships) ..	565 bushels.
Number of acres under cultivation (6 townships)	426 acres.
Price per bushel December 1st (6 townships)	\$1.33

QUINCES.

One orchard only, reported this year, near the Atlantic ocean; yield, 200 bushels, which sold per bushel.....	\$1.50
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GRAPES.

Yield compared to last year (14 townships)...	105 per cent.
Average yield per acre (4 townships).....	2,125 pounds.
Number of acres under cultivation (5 townships)	381½ acres.
Average price per pound received (7 townships).....	4 cents.

STRAWBERRIES.

Yield compared to last year (14 townships)...	56 per cent.
Yield per acre (5 townships).....	890 quarts.
Number of acres under cultivation (6 townships).....	510 acres.
Average price per quart received (12 townships).....	9 cents.

BLACKBERRIES AND RASPBERRIES.

Yield compared to last year (11 townships)...	95 per cent.
Average yield per acre (6 townships).....	683 quarts.
Number of acres under cultivation (6 townships).....	226 acres.
Average price per quart received (10 townships).....	11 cents.

Yield compared to last year..... 66 per cent.

CRANBERRIES.

Yield compared to last year..... 175 per cent.

MELONS.

An unusually good crop and sold well.

TOMATOES.

Yield compared to last year..... 100 per cent.

Sugar corn has this year yielded well and sold readily for good prices; an unusual large amount was planted; the average returns about \$50 per acre.

In the printed forms, besides those crops already mentioned, peas, beans, pickles, asparagus, egg plants, seeds, &c., form a large proportion of the products of the townships adjoining the Delaware river, and should be named in future blanks.

These crops were good but prices not entirely satisfactory.

To blanks have received twenty-five responses, and are indebted to the following gentlemen for the same: Thomas J. Beans, Clayton Conrow, Edward Adams, Robert Taylor, Eli Bowker, E. Budd Marter, A. Stokes, George W. Scott, N. P. Todd, S. C. De Cou, Edwin Satterthwaite, Joseph B. Collins, George W. Lundy, Henry C. Lippincott, Joel Wainwright, William Parry, Alfred Budd, Levi Proud, John E. Darnell, Joseph E. Lapp, Edmund Cook, James Lippincott, Jr., David T. Haines, Theodore B. Gaskill, Uriah Borton.

Yield of crops reported to a Committee of the Burlington County Agricultural Society appointed to award premiums for the largest and best yields.

CORN.

	Bushels.
Joel R. Haines, per acre.....	74
Joseph H. Bowne, per acre.....	80 $\frac{1}{2}$
Ridgeway Hancock, per acre.....	85 $\frac{1}{10}$
Albert Haines, green	91 $\frac{3}{4}$
J. B. Dunphey, green	91 $\frac{3}{4}$
Lyndley Smith, green.....	94 $\frac{1}{2}$
J. Howard Longstreet, green.....	98
S. R. Lippincott. green.....	103

Charles A. King, Centennial.....	42½
G. W. Leeds, Fultz.....	85
Enoch Dudley, Treadwell.....	84½

CABBAGE.

William B. Lippincott—

6 acres sold for \$1,239.15, an average (per acre) of..... \$206 50

TOMATOES.

Ridgeway Pancoast (8 acres)—

1,890 baskets, or 31½ tons, at \$7.00... \$220 50

47 " at 25c 11 75

Total \$232 25

400 baskets green ones.

George L. Gillingham—

666 baskets per acre..... \$190 28

POTATOES.

G. W. Leeds—

Baskets.

Beauty of Hebron, per acre..... 400

Early Rose, " 400

Belle, " 500

White Star, " 500

Joseph E. Lapp, Little Egg Harbor township, 20 acres of corn averaged 75 bushels to the acre.

George Nunn, of Westhampton township, raised 2,180 bushels of corn on 13½ acres of ground, an average of over 82 bushels of shelled corn to the acre.

Asa Haines, of Hartford, N. J., sold from 1½ acre, 1,606 baskets tomatoes, at thirty-five cents per basket, amounting to \$562.10. He thinks he left on ground more than 500 baskets he did not pick; altogether 42 tons, 34 tons per acre.

E. Cook, Burlington, whole crop of wheat averaged 32½ bushels per acre.

REPORT OF JACOB H. LEEDS, SHIPPER OF POULTRY, RANOCAS,
BURLINGTON COUNTY.

To Henry I. Budd, Mount Holly, N. J.:

RESPECTED FRIEND—In reply to thy request, I submit the annexed accounts of my poultry business and farm crops, viz.: From February 1st, 1885, to February 1st, 1886, my poultry shipments amounted to two hundred and ten thousand pounds; the heaviest shipments being made from December 16th, 1885, up to present writing; the prices paid have averaged a little less than the preceding year, which was partly caused by the markets being unusually well stocked at all times with both fresh and frozen, and with Western poultry, that has been so near equal to ours in quality that many dealers who have been handling Jersey stock bought that in preference to paying from 1 to 3 cents per lb. more for ours. Burlington county poultry raisers, having gained the reputation of sending the best poultry that goes into any market, to hold that reputation will have to use their best judgment in getting their stock in the best possible order before sending to market, and kill none but what is fat and use due care in dressing. Four years ago our poultry brought 40 per cent. more than Western stock; this year it brings but from 1 to 3 cents per lb. more, which is proof positive that they are improving their stock faster than our raisers, and, as regards turkeys, the Western run very uniform in size—from 8 to 12 lbs. each—which sell much more readily than some of our large turkeys. In regards to freight discrimination in favor of the West, our freights from Masonville to New York (about 88 miles) are higher than from Chicago and Indianapolis, Ind., a distance of nearly one thousand miles; and if we cannot do something to regulate this, our farmers, who have to pay three or four times the price for land as their Western competitors, are at their mercy.

REPORT OF CROPS GROWN BY GRANVILLE W. LEEDS, ON FARM OF
JACOB H. LEEDS, IN WESTHAMPTON TOWNSHIP, BURLINGTON CO.

Wheat.—Variety, Fultz; sown October 6th, 1884; quantity sown, 1½ bushels per acre; fertilizer, 600 pounds Allen's nitro-phosphate

Potatoes.—Commenced planting last week of April, in rows 2½ feet apart; compost manure used broadcast; Allen's dried and ground fish guano in rows; crop injured somewhat by drouth, which occurred in this locality at the most critical time, particularly for the second earliest and later varieties; quantity 6 acres; yield per acre—

	Baskets.
Early Rose.....	400
Beauty of Hebron.....	400
Belle.....	500
White Star.....	500

Corn.—Seven acres; variety, golden beauty; sod plowed just prior to planting, which was May 11th, in hills 4 by 4 feet; 200 pounds Allen's dried and ground fish used per acre in the hills, which was spread some, with a little dirt brushed on by dropper; worked principally with cultivator, gang plow used some, but finished with cultivator; yield per acre, 116 bushels shelled corn; measured by weighing one load and averaged.

Silos.—There are now ten silos in our county. Nearly all report satisfactory results. Making more and better milk at less cost than other kinds of feed.

P. Lorillard has perhaps the largest one in the county, which he devotes almost exclusively to the fattening of stock, principally cattle. He averages about 180 head at a time in his stalls. Is very successful in fattening with it, both winter and summer; feeds only corn meal with the ensilage. Has 23 pits, 14x14 feet, 22 feet deep, to fill which requires the crop from about 20 acres.

James Lippincott says: My experience this year with ensilage has given perfect satisfaction; want no better food for milk cows, could not get it if I did. It stands head and shoulders above anything I ever used for making milk, either in quantity or quality, and keeps the cows in a healthy condition.

David Roberts, of Moorestown, writes as follows:

My experience with ensilage, though on rather a moderate scale, has extended over a period of five winters of feeding and has been very satisfactory. It has been a cause of wonderment to me that this system of preserving food for cattle has not been more generally adopted in Burlington county, whereas I know of perhaps only one half dozen within a radius of 10 or 15 miles.

My silo is built of brick, wall 9 inches in thickness, laid in cement

deep, the whole smoothly plastered with cement. A frame building, 8 feet in height in front and 5 feet back, with shingle roof, rests on the top of the wall, and allows 3 feet in depth more space for filling. The silo is situated adjoining the barn and stables, with one side adjacent to the drive-way into the barn, some 8 feet from the level of the ground, so the barn floor is on a level with the top of the wall of the silo ; we are thus able to set the cutter so that corn falls directly into the pit ; we use a two-horse tread power ; \$150 will cover the cost of building, and I have always felt that it was money well spent. Previous to this winter we fed on an average 15 head of milch cows for four or five months ; are now feeding 25 head. From $2\frac{1}{2}$ to 3 acres of ground sown in Southern white corn, in drills $2\frac{1}{2}$ feet apart, is sufficient to fill it. We have cut the corn various lengths, but believe when the corn stalk is not over one-half inch in diameter that one inch in length is about right, though opinions differ on this point. The corn should be tassled and the ears formed and in milk when cut ; think it better to allow the stalks to dry out some before hauling from the field, as a good deal of dead weight is done away with and the ensilage likely to be sweeter ; we find it is not necessary to fill the silo all at once and in a great hurry, but have sometimes ceased operations for a day or two so as to accomplish other important jobs on the farm at the time ; the corn in the meantime will undergo considerable fermentation ; but if not allowed to proceed too far is believed to be an advantage ; we use a double covering of boards and weight with sand ; generally begin feeding about the first of winter, and feed from one-half to one bushel per day to each cow ; use some corn-meal and bran, and give a small ration of hay daily ; when weather is dry, feed corn-fodder in the yard. We find a very perceptible increase in the daily yield and the quality very much improved ; the last point has been very conclusively proved by the person to whom the milk was shipped in Philadelphia ; his customers, when once beginning the use of the milk, refusing to have any other. The cattle are improved in appearance, have sleek, glossy skins, and look as if they had just come off of grass pasture.

Before we began feeding ensilage we frequently ran short of clover hay in the spring ; since then we have sold hay that we never dared to before, besides keeping double the amount of stock. Many dairy-men in this vicinity feed brewers' grains and consequently have to

make weekly trips to Philadelphia in order to insure a constant supply. I venture the opinion that the cost of the time spent in getting this to their farms would build and fill a good-sized silo with material vastly superior in every respect.

COMPARISON OF WEATHER AND RAIN-FALL AT RANCOCAS—3 YEARS.
REPORTED BY SPENCER HAINES.

METEOROLOGY.—Synopsis of the weather at Rancocas for the month of December, 1883 :

Number of cloudy days	20
Number of days on which storm fell.....	18
Depth of rain.....	2 inches.
Depth of snow.....	18½ inches.
Average precipitation for ten years, rain.....	2½ inches.
Average precipitation for ten years, snow....	5½ inches.
Mean temperature, A. M. and P. M	30°
Mean temperature for ten years.....	30½°
Highest temperature.....	60° on the 8th.
Lowest temperature	4° on the 23d.
Monthly range of temperature	56

There was a solar halo on the 26th, and lightning on the 27th; prevailing wind, N. W.

Review of the Year 1883.—There were 208 cloudy days in this year, and storm fell on 181 of them, viz.: 127 rain, 34 snow; 10 rain, hail and snow; 2 rain and snow, 6 rain and hail, 2 snow and hail. Depth of rain, 39½ inches; depth of snow, 45½ inches. Average precipitation for twenty years—rain, 45½ inches. 1865 had the greatest rainfall in that time, 57½ inches, and 1874 the least, 35½ inches. Average do. of snow, 37½ inches; the greatest fall occurring in 1868, 65½ inches, the least in 1878, 11½ inches. Total precipitation in the twenty years—of rain, 75 feet 6 inches; of snow, 62 feet 3 inches. The mean temperature, A. M. and P. M., was 48°. Mean for twenty years, 49½°. Highest temperature for the year, 96° on the 7th and 17th of July. Lowest do., 1° on the 12th of January. Yearly range, 95°. There were twenty-six days that the sun did not appear. Prevailing wind, N. W.

METEOROLOGY.—Synopsis of the weather at Rancocas for December, 1884 :

Number of cloudy days	22
Number of days on which rain fell.....	8

Depth of rain	5 inches.
Depth of snow	8½ inches.
Average precipitation of rain for ten years.....	8 inches.
Average precipitation of snow for ten years.....	6⅞ inches.
Mean temperature, A. M. and P. M.....	31½°
Mean temperature for ten years.....	30½°
Lowest temperature.....	3° below zero on 20th.
Highest temperature	63° on the 31st.
Monthly range.....	66°
Prevailing wind.....	N. W.

There was lightning on the 15th, solar halo on the 23d and lunar halo on the 20th.

Review of the Year 1884.—Number of cloudy days, 198. Storm fell on 153 of them, as follows: Rain, 116; snow, 17; rain, hail and snow, 5; rain and hail, 3; rain and snow, 11; snow and hail, 1. There were forty-one days on which the sun did not appear. Total precipitation—rain, 39½ inches; snow, 28 inches. Average do. for twenty-one years—rain, 45 inches; snow, 35½ inches. The year 1868 showed the heaviest snow-fall, 65½ inches; and 1878 the least, 11½ inches. The heaviest rain-fall occurred in 1865, 57½ inches; the least do. in 1874, 35½ inches. The mean temperature was 49½°; mean temperature in twenty-one years, 49°. The lowest temperature for 1884 was 3° below zero, December 20th; the highest was 94°, June 19th and 23d; the range for the year, 97°. The lowest temperature in the past twenty-one years was 15° below zero on the 1st of January, 1881, and the highest 102°, on the 7th of September, same year. Prevailing wind, N. W. There was frost in every month during the past year, and lightning in all excepting the first.

METEOROLOGY.—Synopsis of the weather at Rancocas for December, 1885:

Number of cloudy days	16
Number of days on which rain fell	6
Number of days on which snow fell	3
Number of days on which snow and rain fell...	3

Average precipitation of snow for ten years..... $6\frac{1}{16}$ inches.
 Mean temperature, A. M. and P. M..... 33°
 Mean temperature for ten years $30\frac{1}{16}^{\circ}$
 Highest temperature..... 59° on the 23d.
 Lowest temperature 8° on the 8th.
 Monthly range..... 51°
 Prevailing wind..... N. W.

The mercury fell 12 degrees in five minutes during a snow squall on the 8d. There was a parhelion on the 15th and a paraselene on the 17th.

Review of the Year 1885.—There were 194 cloudy days in the year 1885, on twelve of which the sun did not appear. Storm fell on 164 days, as follows: Rain, 112; snow, 31; rain, hail and snow, 8; rain and hail, 3; snow and rain, 10. Total precipitation—rain, $37\frac{1}{8}$ inches; snow, $30\frac{1}{2}$ inches. Average precipitation for ten years—rain, 42 inches; snow, 30 inches. The total rain-fall for twenty-one years has been 78 feet 7 inches; of snow, 64 feet 6 inches. The mean temperature, A. M. and P. M., $47\frac{1}{2}^{\circ}$; mean do. for ten years, $48\frac{1}{2}^{\circ}$. The lowest temperature was 1° below zero, on the 11th of February; highest do. 98° on the 21st of July. Range of temperature, 99° . Prevailing wind, N. W.

The following excellent report from Thomas J. Beans, of temperature, rain-fall, crops, &c., is so much to the point, I have offered it in its entirety:

TEMPERATURE AND RAIN-FALL FOR 1885.

	TEMPERATURE.			RAIN AND SNOW.		Remarks.
	Max.	Min.	Mean.	Melted snow		
January....	55°	4°	28.99°	3.43 in	2.8 in.	{ Frost, 12th; harmed; did not destroy.
February.....	42°	-1°	21.58°	4.23 "	20.75 "	
March.....	63°	6.5°	29.71°	1.08 "	5.0 "	
April.....	85°	27°	49.06°	2.82 "	.....
May.....	89°	37°	59.06°	2.845 "	.....
June.....	96°	55°	69.32°	2.57 "	{ Deadly frost, 23d; close of season.
July.....	99°	60°	74.85°	3.08 "	.....
August.....	93°	52.5°	70.1°	7.165 "	.....
September.....	84°	43°	62.49°	0.57 "	.....
October.....	81°	31°	51.88°	3.48 "	.....
November....	72.5°	25°	43.04°	3.77 "	Trace.	
December.....	59.5°	7°	34.56°	3.07 "	.....
For year....	99°	-1°	49.55°	38.11 "	28.55 in.	

The rain-fall for the three spring months, 6.74 inches, being 3.63 inches below mean, allowing the breaking up of ground for all crops to be done in the best manner, and as it is not possible to be done during a wet spring. There was 12.86 inches in the heated summer months and 7.82 inches, or 2.66 inches less than mean, for the three autumn months, resulting in the lowest supply of water in the wells and springs that we have had for 22 years. But our county is so bordered and pierced by tidewater and so numerous are permanent streams that the resulting inconvenience is not nearly so serious as it would be in many localities less favored with water-supply.

Between the harmful but not destructive frost of May 12th, and the deadly frost of October 23d, there intervened 164 days for out-of-door growth of tender vegetation.

The year 1885 was coolest of the past 22 years, with the exception of 1875, which differed by only seven-hundredths of a degree in annual mean.

The oats was sown when conditions were better than usual, the coolness of the spring months (being 3.77° below average) was favorable and compensated for the light rain-fall, and made the crop a superior one.

We have seldom planted corn when the ground was in better mechanical condition than last spring. The low temperature retarded its growth during its first stages, but the warmth and generous supply of rain during July and August pushed it rapidly forward and made a heavy crop, that a dry September and its following matured before the deadly frost of October 23d came. There was, however, more of offal corn than in the crop of 1884, which was exceptionally good in that respect. There was less than usual of fodder-wasting autumn winds.

Potatoes.—Not an average crop; quality superior.

Wheat.—Very uneven crop; late sown and exposed; poor, but in most cases better yields than deemed possible in early spring; cool

of citrons for \$377.62.

Robert T. Evans (Mt. Laurel) from two and one-half acres (planted three and one-half feet by two and one-quarter feet) sold 12,465 cabbages for \$506.75.

Clayton Conrow, of Cinnaminson township, furnishes the following account of rain-fall, including snow when melted :

			Inches.				Inches.
January	6	.....	1.86	June	4	.....	.10
"	12, 13	.....	.50	"	5	.....	.15
"	15	.....	.58	"	8	.....	.20
"	16	.....	.10	"	16, 17	.....	1.00
"	23, 24	.....	.73	"	28	.....	.53
Total ..			8.27	Total			1.98
February	9, 10	.....	1.35	July	4	.....	.24
"	13	.....	.08	"	7	.....	1.14
"	14	.....	.30	"	9	.....	.03
"	15, 16	.....	1.57	"	14	.....	.66
"	18	.....	.15	"	20	.....	.15
"	25	.....	.50	"	26	.....	.38
Total ..			3.95	"	29	.....	1.00
March	1	.....	.12	Total			3.60
"	27	.....	.01	August	1	.....	.31
"	28, 29	.....	.36	"	2	.....	.60
Total .....			.49	"	8	.....	.59
April	7, 8	.....	.21	"	8	.....	2.10
"	8	.....	.22	"	7	.....	.06
"	15	.....	.11	"	13	.....	.60
"	26	.....	.53	"	22	.....	.29
"	28	.....	.76	"	23	.....	.06
Total			1.83	"	25	.....	2.32
May	1	.....	.24	"	29	.....	.24
"	4	.....	.05	"	30	.....	.10
"	7, 8	.....	1.52	Total			7.26
"	13	.....	.07	September	8	.....	.15
"	23	.....	.24	"	9	.....	.13
"	26	.....	.11	"	21	.....	.07
"	31	.....	.66	Total .....			.35
Total			2.89				

October	3	.....	.09	November	22	.....	1.12
"	4	.....	.18	"	23	.....	.19
"	6	.....	.47	"	24, 25	.....	.21
"	8	.....	.02				
"	13	.....	1.34			Total	3.89
"	21	.....	.93				
"	29, 30	.....	.54	December	5	.....	.05
				"	9	.....	.86
		Total..	3.52	"	18, 14	.....	1.56
				"	31	.....	.59
November	1, 2	.....	1.77			Total	3.06
"	8	.....	.12				
"	9	.....	.48				
Total for year..... 36.09							
Year 1884..... 44.41							
Year 1883..... 40.16							
Total rain-fall for the growing crop months..... 17.91							
Rain fell on 79 days of 1884 and 80 days of 1885.							

REPORT OF MT. LAUREL FARMERS' CLUB.

The annual meeting of the Mount Laurel Farmers' Club make the following report: They appointed committees and offered first and second premiums for the best fields of corn and potatoes.

They award S. R. Lippincott, of Moorestown, the first premium for corn, yield 120 bushels per acre. Planted second week in May, on sod, four feet apart each way. Cultivated three times with Darnell's marker and Atkinson's corn plow. No manure. Variety, Yellow Dent.

Second premium awarded to Howard Darnell, of Mount Laurel, yield 108 bushels per acre; planted 22d of May, four feet apart each way. Farmed with Randall corn plow while small, and the last plowing with one-horse plows. Gas lime spread on the sod before plowing, and manured in the hill with handful of hen manure and ashes mixed. Variety, Gourd Seed.

They award William Dunn Rogers, of Moorestown, the first premium for one acre of potatoes, yield 250 bushels. Planted in drills, manure and phosphate put in the drill before the potatoes were dropped. Fertilizers used, Collins' Electric and Shoemaker's Swift-Sure.

Second premium to J. R. Evans, of Hartford, for one acre of potatoes, yield 200 bushels. Manure spread broadcast, and fertilizer

applied in the drill. Fertilizers used, Lister's and Shoemaker's Swift-Sure.

Asa Roberts gave account of a wonderful yield of potatoes grown on an old meadow where there had *never* been any manure applied before. The ground was well plowed, and on one acre thirty dollars' worth of stable manure was applied broadcast, and twelve dollars' worth of fertilizers in the drill. On another acre forty-two dollars' worth of fertilizer applied broadcast; yield 250 bushels per acre or nearly the same on each; if any difference, the best where only the commercial fertilizer was used. Kind of fertilizers used, Collins' Electric, Swift-Sure, Mapes' and Lister's. Very little difference in the yield with the different fertilizers.

Enclosed find a statement of crops by our members, nearly correct.

Corn	Full average crop.
Wheat	About two-thirds of a crop.
Oats	Full crop.
Hay	Very light, one-half ton to acre.
Pasture	Short crop.
Potatoes, White.....	Average crop.
Sweet Potatoes.....	Average crop.
Apples	Light crop and very few for winter.
Pears	Fair crop.
Grapes	Fair crop.
Berries	Few grown, but light crop.

COLUMBUS GRANGE, No. 58, P. OF H.

The farmers have had an up-hill road the past season; with pork selling from \$4.50 to \$5.00 per cwt., wheat 90 to 95 cents per bushel, poultry 10 to 14 cents a pound and other produce at proportionately low figures, there will not be much margin left by 25th of March next to rejoice over.

The committee only report 20 farms, aggregating 2,233 acres; ranging from 34 to 250 acres each, averaging 112 acres. We find on these farms 84 horses, 6 mules, 322 cows and 58 other cattle. The sales from these cows are as follows: Butter, \$1,971; milk, \$11,715; calves, \$2,436; total, \$16,122, averaging \$50 per cow. We find that 7 make butter, 8 sell milk, 6 fat calves, and 11 divided between butter, milk and calves. The average per cow of those who sell milk, is \$62; for those who make butter, \$39.34; for those who fat calves, \$27.37,

between milk and calves, to be \$54.03 per cow; between butter and calves, to be \$11.97 per cow. Amount of pork sold, \$3,256; 230 hogs kept over. Only four farmers report sheep, worth \$735; poultry, \$4,103.

Acres in wheat, 177; average, 11 bushels per acre; rye, 105 acres; average 13 bushels; oats, 82 acres; average 44 bushels; corn, 365 acres; average 48 bushels; hay, 445 acres; average $1\frac{1}{10}$ tons; tomatoes, 9 acres; average \$85 per acre; potatoes (Irish), 46 acres; average \$70 per acre, rating at 60 cents per bushel; sweet potatoes, $5\frac{1}{2}$ acres; averaging \$143; sweet corn, $28\frac{1}{2}$ acres; average \$35; seven report apples, \$612; one reports turnips, $\frac{3}{4}$ acre, \$50; one reports 2 acres of millet, 5 tons per acre; two report melons, 2 acres, average \$30 per acre; $2\frac{1}{2}$ acres cabbage, \$225; egg plants, $\frac{1}{8}$ acre, \$20; lima beans, $\frac{1}{8}$ acre, \$20; three report asparagus, \$237; \$75 per acre; one reports pears, \$43; one tobacco, \$500; three report small fruit, \$195; two report peaches, \$910; three report strawberries, \$410; one reports pickles, \$38; one reports squash, \$40; one citrons, \$34. Many members failed to report.

Have made purchases through our co-operative fund to the amount of \$2,075.12, as follows: 153 tons of coal, costing \$752.97; timothy seed, \$55.13; clover seed, \$387.58; potatoes, \$182.25; plaster, one car load, \$105, and the balance, \$592.19, in sundries. A large amount purchased in Philadelphia by trade card, of which we have no account. We are fully assured by experience that co-operation and combinations are a success.

Our Grange numbers 54 members, 31 males and 23 females. Meetings once a week, fall and winter; and once in two weeks, spring and summer, with a very good attendance.

FRANKLIN S. SELLEY,
Chairman Executive Committee.

MOORESTOWN GRANGE, No. 8, P. H.

HARTFORD, N. J., January 25th, 1886.

Henry I. Budd, Sec'y Burlington County Board of Agriculture:

The committee appointed to visit the farms of the members of Moorestown Grange report having visited forty-one farms, consisting of—

Acres of meadow.....	55
Total	5,227
Average number of acres in each farm.....	129
Acres in apple orchards (a poor crop)	190
Acres in pears (poor crop).....	234
Peach trees.....	3,200
Acres in strawberries (realizing \$75 per acre)....	50
Acres in currants (realizing \$75 per acre).....	3
Acres in raspberries (realizing \$100 per acre).....	23
Acres in blackberries (realizing \$100 per acre).....	12
Acres in grapes (realizing \$400 per acre).....	84
Acres in corn (yielding 62 bushels per acre).....	547
Acres in wheat (yielding 25 bushels per acre).....	436
Acres in grass (yielding 1½ tons per acre).....	2,027
Acres in white potatoes (yield per acre 200 bushels).....	183
Sweet potato sprouts (a good crop).....	380,000
Acres in citron (realizing per acre \$125).....	45
Acres in tomatoes (realizing per acre \$175).....	61
Acres in cabbage (realizing per acre \$142 to \$206).....	95
Acres in sugar corn (realizing per acre \$68).....	100
Cows (averaging from \$30 to \$79 per head)	453
Heifers	73
Horses.....	129
Colts	6
Mules	70
Hogs	394
Sheep	119
Hens kept over (some cholera still prevalent).....	1,400

We find the most profitable crops were grapes, tomatoes and cabbage.

Fraternally,

KATE B. LIPPINCOTT,

Secretary.

REPORT OF MEDFORD GRANGE.

We have taken no inventory this year of the amount of land in acres held by each member, nor the amount of each variety of product produced, or the number and variety of animals owned by each one.

meat in its variety, for that of producing mink, which is sold at Atlantic City and Philadelphia.

CROP REPORT.

Our township was visited this year with an unusual drouth, continuing very late in the season.

Hay (clover) was 50 per cent. of a crop, with exceptions in some cases of 75 to 90 per cent.

Timothy was short and light, with a few exceptions of fair crop.

Wheat, ranging from 40 to 90 per cent.

Rye, 100 per cent. in grain yield ; straw excellent, with good price.

Oats, 100 per cent., unusually good.

Corn, 90 per cent., affected by severe drouth ; yield more than anticipated.

CROP AND STOCK REPORT.

Buckwheat, but little grown here, good, 85 per cent.

Early potatoes, white, 55 per cent., poor yield, with few exceptions.

Late potatoes, white, 25 per cent., a failure on account of drouth.

Sweet potatoes, yield in cases very poor, unusual (75 per cent.) In others fair to good.

Apples, 85 per cent., good yield, prices low.

Pears, 90 per cent., good, but uneven on surface, as though bitten by a parasite.

Peaches, 80 per cent.; not many grown.

Truck, in variety, 80 per cent.

Cabbage, early, 50 per cent., affected by drouth.

Late to very late, 85 per cent., grown after late rains came.

Celery, late, 90 per cent., grew after late rains.

No pleuro-pneumonia or hog cholera in neighborhood to my knowledge.

Our co-operative association sold in groceries, past year, \$1,641.08, and saved to the members and purchasing fund 22 per cent. Bought 120 tons of coal, three cars of bran, 65 bushels timothy seed, at a saving of \$250.

D. T. HAINES,
Chairman.

To the State Board of Agriculture of the State of New Jersey :

Mount Holly Grange, No. 37, has recently added to its membership and has a prospect of a further increase.

By co-operation in buying grass seeds, amounting to about 100 bushels of clover, and nearly the same quantity of timothy, an advantage of quality and price is realized of about 15 or 20 per cent. Other co-operative dealings by the members saved in some articles a greater and in some a less percentage.

The farms in the jurisdiction of this Grange will compare favorably with the farms in any part of the State. While there is some poor land along the south side of the Rancocas creek, there are a great many farms of a superior quality in a very high state of cultivation, owing in a great measure to having marl beds on some, and marl is convenient to all of them, and lime being distributed along the banks of the Rancocas creek and at all the turnouts of the railroads that extend in many directions through the neighborhood.

The crops raised are very diversified, being nearly all varieties of grain, grass, beef, pork, poultry, mutton and lambs. Milk has become one of the greatest market commodities, the use and production of which is increasing faster than any other farm crop.

There is also an increased interest taken in all the fruits and vegetables that are suited to this climate, the market for them being generally remunerative, either for immediate use, as well as at the canning factory and retention houses.

CROSSWICKS GRANGE, No. 61.

Our membership is about the same as last year. I think there is an increasing interest among our members, and evidence of the necessity of organization and co-operation of the farmers to more successfully cope with the money and monopolistic powers of the country. Crops in our vicinity are some better than last year, with much lower prices ; outlook not very encouraging for farmers.

nourishing condition.

Pemberton Grange is not very active, but is gradually assuming new life.

Moorestown is the banner Grange and district, either in quality of crops, amount realized from their sale and thoroughness in making up reports.

From her Grange and two of her citizens, we have received most complete records. If all other districts and Granges were to imitate her example, the productions of a most fertile county could be epitomized into an intelligent and instructive shape.

Following this is appended the officers and report of the Burlington County Agricultural Society, one of the most progressive and successful agricultural societies in the United States.

BURLINGTON COUNTY AGRICULTURAL SOCIETY.

OFFICERS AND DIRECTORS FOR 1886.

<i>President</i>	ISAAC FENIMORE.....	Mount Holly.
<i>Vice President</i>	WILLIAM S. TAYLOR.....	Burlington.
<i>Recording Secretary</i>	JOHN B. COLLINS.....	Mount Holly.
<i>Corresponding Secretary</i>	HENRY I. BUDD.....	Mount Holly.
<i>Treasurer</i>	EDWARD B. JONES.....	Mount Holly.

BOARD OF DIRECTORS.

ISAAC FENIMORE.....	Mount Holly.
BENJAMIN F. DEACON.....	Mount Holly.
JOHN B. COLLINS.....	Mount Holly.
WILLIAM S. TAYLOR.....	Burlington.
JOSEPH WILLS.....	Rancocas.
HENRY ELLIS.....	Juliustown.
HENRY I. BUDD.....	Mount Holly.
WILLIAM R. LIPPINCOTT.....	Cinnaminson.
JUDSON C. GASKILL.....	Birmingham.
SAMUEL H. CHAMBERS.....	Mount Holly.
WILLIAM C. PARRY.....	Hainesport.

FINANCE COMMITTEE.

JAMES LIPPINCOTT,	JAMES W. DEACON,	ROBERT B. ENGLE.
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B. F. DEACON.....	Mount Holly.
JOHN B. COLLINS.....	Mount Holly.
HENRY I. BUDD.....	Mount Holly.
JOSEPH WILLS.....	Ranccocas.
SAMUEL H. CHAMBERS.....	Mount Holly.

ANNUAL FAIR, OCTOBER 11TH TO 16TH, 1886.

TREASURER'S REPORT

To the Stockholders of the Burlington County Agricultural Society for the year ending January 9th, 1886 :

RECEIPTS.

Balance on hand at last report.....	\$169 24
Rent of grounds and pasture.....	163 18
Admissions to grounds.....	15,936 18
Admissions to grand stand.....	1,949 56
Old lumber, hay and straw	97 45
Department of public comfort	465 13
Entrance fee for horses.....	1,787 67
Crossing the ring.....	235 00
Coat and package room.....	55 90
Rent of stands and privileges..	4,217 50
Borrowed on notes.....	4,468 00
Advertising in schedule.	495 00
	<hr/>
	<u>\$30,034 76</u>

DISBURSEMENTS.

Dues to County Board of Agriculture	\$12 00
Dues to Trotting Association	56 00
Water rent.....	35 00
Printing schedules.....	506 30
Telegraphing.	28 69
Fair supplies.....	551 88
Printing.....	1,047 81
Advertising.....	862 11
Freights and express.....	19 98
Postage.....	337 68
Supplies for department public comfort.....	368 85
Music.....	215 00
Repairs.....	823 15
Labor.....	118 12
Detectives.....	96 00
Clerks.....	421 86

Police	302 00
Salaries	650 00
Supplies for dining-room.....	323 60
Notes paid.....	9,500 00
Interest on notes.....	390 00
Premiums.....	10,996 50
Hay, straw and poultry feed.....	669 43
Balance in Treasurer's hands.....	1,016 10
	<hr/>
	\$30,034 76

In addition to the cash on hand, there is due the Society \$75.75 for
~~admission in the school~~

except notes, were \$24,174.12 in 1884, and \$28,418.50 in 1885. The general expenses have not varied much from the preceding year; in 1884 they were \$7,159.60; in 1885 they were \$7,455.52. The premiums in 1884 amounted to \$11,118.75; in 1885 to \$10,996.50.

The character and number of our exhibits, although fine and large in other years, this season exceeded all others in number, variety and quality, crowding and causing us to make all kinds of shifts to provide room, and forcing us to reject many for want of space. This shows the absolute necessity, if we wish to grow with our opportunities, of providing a great deal more room. The number of entries was over 6,270—an increase of 1,270.

The amount of our advertising matter is continually increasing. The 8,000 schedules were practically exhausted before the fair commenced. The number in the future should not be less than 10,000. These were supplemented with 9,000 posters, 13,000 trotting slips, 26,000 invitation cards, 60,000 flyers, and many other modes of attracting the population tributary to our grounds. By our vigorous efforts at advertising in Philadelphia, Trenton and Camden, we have in a few years increased the attendance from these places from 1,000 to 10,000.

The newspapers and railroads have generously aided us, and have received corresponding benefits in return, as liberality in the management of public trusts, in the long run, pays all concerned handsomely. The newspapers, especially those in Philadelphia, have manifested great interest in our progress. On each day of our fair they devoted whole columns to the setting forth of our attractions, thus giving us a reputation which continually contributes to our advancement.

The superintendent of our railroads deserves our thanks for his many efforts to make our last fair a success. Being new in his position, he miscalculated in some of his arrangements, but his interest is so lively, he intends all possible measures to further the quick transportation of freight and passengers to and from our grounds. The Pennsylvania Railroad Company is fully impressed with our importance as a permanent source of revenue to them, and consequently is quick to respond to reasonable requests for rates, extensions, favors or improvements that will in the present or future further our prosperity.

The pressure for increased space for the exhibitors, and larger and better accommodations for those interested in the track exercises, induced your management to appoint a committee to visit and investigate the most prominent, best designed buildings and grounds, secure

without expense to the society. Their movements extended over Monmouth Park, Sheepshead Bay, Rochester, Pittsburg, Chicago, St. Louis, Indianapolis, Louisville, Lexington, Cincinnati and several minor points. At each of these places they saw much that could be utilized for our benefit. But at Sheepshead Bay, Chicago and St. Louis they found concentrated the experience of many years of management and observation. Especially was this the case at St. Louis. Here has been erected the ideal grand stand, located on grounds in harmony with it, as are all their buildings and improvements, making altogether a fitting place for holding the largest and most popular agricultural fair in the United States. At their fair \$50,000 are annually offered in premiums and a city of 400,000 inhabitants sus-

CAMDEN COUNTY.

CAMDEN COUNTY BOARD OF AGRICULTURE.

OFFICERS FOR 1886.

<i>President</i>	EZRA C. BELL.....	Mount Ephraim.
<i>Vice President</i>	EDWARD S. HUSTON.....	Haddonfield.
<i>Secretary</i>	GEORGE T. HAINES.....	Haddonfield.
<i>Treasurer</i>	J. STOKES COLES.....	Haddonfield.

DIRECTORS.

THEODORE HIDER.....	Blackwood.
JOEL HORNER.....	Merchantville.
E. BURROUGH.....	Merchantville.
S. L. BURROUGH.....	Merchantville.
AMOS E. KAIGHN.. ..	Ellisburg.

DIRECTORS TO STATE BOARD.

E. BURROUGH.....	Merchantville.
E. S. HUSTON	Haddonfield.

SOCIETY AND CROP REPORT.

BY GEO. T. HAINES.

At the annual meeting of the Board held November 24th, 1885, L. T. Derousse read a report of Dr. Augustus Voelcker, of a committee of the House of Commons of English Parliament, on the potato disease in 1880, showing that the disease is carried on by spores floating through the air as well as by inoculation by atmospheric causes.

He also read one from W. T. Thiston Dyre on the same subject which confirmed the former.

Among the exhibits at the meeting of the Board were two specimens of Early Rose potatoes by L. T. Derousse, weighing two pounds two and a half ounces and two pounds ten and a half

taken from a crop of 900 bushels per acre.

C. Turnly exhibited a fine specimen of Chrysanthemum, and read an interesting article on flowers, being a florist by occupation.

Joel Clements reports marketing 1,285 baskets of peppers from one acre of ground, for which he received \$225; and from a scant acre and a quarter of squashes 1,100 baskets, receipts \$185; from a scant acre and a half of cabbage, \$203, and from one and a half acres of late tomatoes, \$212.

J. D. Glover reports 486 bushels of wheat from seventeen acres.

J. C. Hollingshead reports twenty-five tons of Globe Mangel Wurtzel sugar beets from one and one-half acres.

N. Barton reports 250 bushels of wheat from eight and one-half acres.

For further report of crops, see statistics, as follows, which, it is to be regretted, are not fuller and more correct, on account of so few responding to the request for information; with thanks to those who did, the following is submitted:

CORN.

Yield compared to last year.....	90 per cent.
Average yield per acre.....	41 bushels.
Number of acres under cultivation, three townships report.....	4,700 acres.
Price per bushel December 1st.....	48 cents.

OATS.

Yield compared to last year.....	95 per cent.
Average yield per acre.....	29 bushels.
Number of acres under cultivation, two townships report.....	200 acres.
Price per bushel December 1st.....	40 cents.

WHEAT.

Yield compared to last year.....	73 per cent.
Average yield per acre.....	16 bushels.
Number of acres under cultivation, three townships.....	2,900 acres.
Price per bushel December 1st.....	96 cents.

POTATOES.

Yield compared to last year.....	66 per cent.
Average yield per acre.....	50 barrels.
Number of acres under cultivation, four townships.....	1,800 acres.
Price per barrel December 1st.....	\$1.37.

SWEET POTATOES.

Yield compared to last year.....	107 per cent.
Average yield per acre.....	44 barrels.
Number of acres under cultivation, four townships.....	1,000 acres.
Price per barrel December 1st.....	\$2.00.

CABBAGES.

Yield compared to last year.....	165 per cent.
Average yield per acre.....	3,000 heads.
Number of acres under cultivation, four townships.....	1,155 acres.
Price per 100 December 1st.....	\$3.00.

APPLES.

Yield compared to last year.....	48 per cent.
Average yield per acre.....	18 barrels.
Number of acres under cultivation, two townships.....	250 acres.
Price per barrel December 1st	\$1.75.

PEARS.

Yield compared to last year.....	106 per cent.
Average yield per acre.....	75 bushels.
Number of acres under cultivation, 2 townships.....	50 acres.
Price per bushel December 1st.....	90 cents.

PEACHES.

Yield compared to last year.....	110 per cent.
Average yield per acre.....	100 bushels.
Number of acres under cultivation, two townships.....	150 acres.
Price per bushel December 1st.....	\$1.00.

GRAPES.

Yield compared to last year.....	100 per cent.
Average yield per acre.....	2,500 pounds.
Number of acres under cultivation, two townships.....	1,000 acres.
Average price per pound received.....	3 cents.

STRAWBERRIES.

Yield compared to last year.....	50 per cent.
Yield per acre.....	1,080 quarts.
Number of acres under cultivation, two townships.....	300 acres.
Average price per quart received, 4 persons report.....	7 cents.

BLACKBERRIES AND RASPBERRIES.

Yield compared to last year.....	86 per cent.
Average yield per acre.....	1,000 quarts.
Number of acres under cultivation, two townships.....	600 acres.
Average price per quart received	6 cents.

Yield of millet hay per acre.....	1 ton.
Yield of clover hay per acre.	1½ tons.
Yield of other hay per acre, timothy.....	1½ tons.
Acreage in wheat compared to last year.....	100 per cent.

Some farmers say that the severe winter damaged the wheat; dry weather shortened the corn crop in some sections, while potatoes were injured by the drouth; but the rains came in time to make a full crop of sweet potatoes. A smaller acreage of cabbage than last year, but the crop was good. The crop of hay was short, but more fodder corn raised than heretofore, which will in a measure make up the deficiency. Peaches are more looked after than formerly; they appear to be growing in favor, many small orchards having been put out last year.

Standard pears are being grown more largely. Grapes and small fruits are cultivated in some sections of the county quite extensively, but sufficient data has not been furnished to make a satisfactory showing.

In regard to contagious diseases of animals it is authoritatively reported that at the present time, January 25th, 1886, there is one herd of cattle in our county affected with contagious pleuro-pneumonia, a second outbreak in the herd having occurred within the past week. There are also a few herds of swine affected with swine plague.

Isolated cases of glanders in horses can be found almost weekly, and it is surprising that there is not more of it when we consider how careless the owners of the animals are with them, allowing them on the public streets and drinking from public troughs, etc.; it is certainly very dangerous, to say the least.

At the annual meeting of the Farmers' Association (a branch of the County Board), held January 28th, 1886, the following resolutions were adopted, viz.:

WHEREAS, There having recently been established large manufactories of oleomargarine, butterine, suine and other substances imitating butter, and being sold as such, it being in fact bogus butter; *and whereas*, legislation in other States to prevent its manufacture has been declared unconstitutional and void, and legislation in this State compelling the package in which it is sold to be marked does not protect the consumer nor the producer of genuine butter;

Resolved, That we hereby urge upon the State Board of Agriculture the

genuine butter from the impositions and frauds of these bogus butter manufacturers; and to this end we would recommend the passage of an act compelling every roll, piece, lump, pound or parcel of each and all of these substances resembling butter to be marked with its true name upon the substance itself; and be it

Resolved, That we hereby request our delegates from the county board of agriculture to present a copy of these resolutions and request action thereon by the State Board of Agriculture.

Also,

WHEREAS, By an act of the Legislature approved March 30th, 1874, the sum of three thousand dollars was appropriated annually to be offered as State premiums under the joint control of the New Jersey State Agricultural Society and the State Board of Agriculture; *and whereas*, under the present system of making up and offering said premiums the people of the State do not receive the full benefit of the money thus expended; therefore, be it

Resolved, That we hereby recommend and urge the State Board of Agriculture to formulate a system of offering the State premiums on the products of the field and garden, whereby the people of the State may be informed of the mode and manner of the cultivation, manuring, marketing and receipts of the successful crops;

Resolved, That the delegates from our county board of agriculture be and are hereby requested to present a copy of these resolutions to the State Board of Agriculture and request action on the same.

CUMBERLAND COUNTY.

CUMBERLAND COUNTY BOARD OF AGRICULTURE.

OFFICERS FOR 1886.

<i>President</i>	MORRIS BACON.	Greenwich.
<i>Secretary</i>	W. O. GARRISON	Bridgeton.
<i>Treasurer</i>	T. F. BAKER	Bridgeton.

DIRECTORS.

JOHN TYLER	Greenwich.
JOHN RAINIER	Shiloh.
WINFIELD BONHAM	Shiloh.
SAMUEL TOMLINSON	Roadstown.

The farmers of Cumberland county, though their lot is cast in the much-ridiculed southern part of a State that is said to be out of the Union and about to be annexed to Staten Island, are not ready to admit that they are behind their neighbors in methods of tillage or in material prosperity. Nor will they admit without proof that others surpass them in variety and value of products. Neither do they neglect to meet together to compare methods and discuss such questions as are pertinent to their business.

Almost every community has a Grange, and, in addition, Vineland has a Fair Association and a Floral Society. These hold a yearly fair and make a display that would be creditable to many societies that are more widely advertised.

The Cumberland County Agricultural and Horticultural Society holds its fair annually the first week in September. The attendance is from 12,000 to 16,000 during the two days that it continues.

Being strictly a county fair, the exhibits are limited to the products of the county, yet, at the last exhibition, there were on the tables more than four hundred plates of apples, one hundred and thirty-two plates of pears, sixty-four plates of peaches and large displays of

grapes, quinces and other fruits. The other departments were equally well represented.

The crop of corn was unusually large, probably twenty-five per cent. above the average. Several fields are said to have produced from ninety to one hundred bushels of shelled corn per acre. But as these statements are based on estimates, and not careful weights and measures, I have not used them in this report.

The oat crop was good and the grain heavy. Probably the largest yield in the county was on the farm of Smith Tomlin, at Maurice-town, reported at 78 bushels by measure, weighing 35 pounds per bushel to the acre.

The wheat crop is looked upon as the most unprofitable grown in many years. From the best data at command, the average yield was not above twelve bushels per acre, and the highest reported yield is not quite thirty.

Potatoes were a good crop, and farmers are planting more largely each year. High cultivation and thorough manuring have increased the average crop per acre, until from the township reports the average production is 142 bushels.

Eli Minch reports 1,910 bushels of Silver Lake potatoes, on seven and one-half acres.

Charles Bitters reports 800 bushels on four acres.

John B. Garrison, 2,840 baskets on five and one-half acres; one-twelfth of an acre in the center of the field was carefully measured, and the potatoes weighed 1,633½ pounds, equal to 327 bushels per acre.

Robert Ware had 1,700 bushels from six and one-half acres, and Joseph A. Minch 4,400 bushels from sixteen acres.

Peach-growing is receiving much attention; the greater portion of three townships is well adapted to the production of this most luscious of fruits. So great has been the demand for trees, that there is not a nursery in the county that can fill an order for a thousand peach trees of the popular varieties, and many who intended to plant out orchards this spring must wait until another year for want of stock. It is probably within bounds to say that 2,000 acres were set with trees in November.

Many orchards produced large crops, but few accurate accounts of the product or the receipts were kept.

Mr. Thos. E. Hunt, of Greenwich, picked from a young orchard of nine and one-half acres 2,192 baskets, for which he received \$1,527.51.

of \$384.20. Mr. Hepner sold 3,100 baskets from twenty acres; price not reported. There is standing near this orchard a peach tree having a trunk eight feet in circumference, two feet above the ground. There has been sold from this tree \$38 worth of fruit in one year.

The small fruit interest is very large. The railroad companies run special trains during the months of June and July for the accommodation of the strawberry and blackberry growers. It has not been possible to obtain reliable statistics of the crop, but the shipments from Vineland alone amounted to several carloads each day in the height of the season.

The loss from hog disease has been great; probably not less than thirty per cent. of all hogs in the county have died from this cause.

If some remedy, or, better still, preventive, can be made known, it will be worth thousands of dollars to our breeders.

Farming is a business, not simply an occupation, and those farmers who have conducted their farms on progressive business principles are not the ones we hear complaining that farming don't pay.

ESSEX COUNTY.

ESSEX COUNTY BOARD OF AGRICULTURE.

OFFICERS OF THE BOARD FOR 1886.

<i>President</i>	ISAAC S. CRANE.
<i>Vice-President</i>	M. H. CANFIELD.
<i>Secretary</i>	J. H. M. COOK.
<i>Treasurer</i>	AUSTIN E. HEDDEN.

BOARD OF DIRECTORS.

H. T. HARRISON,	J. H. BALDWIN,	C. G. CAMPBELL,
EDWARD WILLIAMS,	A. PRESTON WILLIAMS.	

DELEGATES TO STATE BOARD.

AUSTIN E. HEDDEN,	ISAAC S. CRANE.
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ANNUAL CROP REPORT.

BY J. H. BALDWIN.

As the year 1885 draws to a close, and those engaged in agricultural and horticultural pursuits in the county cast a retrospective glance over the year's work and its results, there will be things brought to mind to gratify them, and there will also be disappointments to consider. The preceding fall and winter were unfavorable to grain. The rain-fall throughout September and October, 1884, was slight, and plowing was put off until an unusually late date. Wheat and rye had made but a meagre growth when the rigors of winter were upon it, and the severity of the weather that followed about destroyed wheat, but rye was not so seriously injured. One thresherman reported in reference to the former, that the crop of one man, in 1844, exceeded that of all those for whom he threshed in 1885, and he does a large amount of work every year.

Spring-grown grain—oats and barley—were very much better. Oats suffered from drouth, and made only short straw, but late rains

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for several years. The yield per acre was not as great as common.

as the taste and skill of the ladies can shape, arrange and fabricate, were shown. Large and cumbersome articles, farm machinery, etc., had to be rejected for want of a place to put them.

The attendance during the two days and evenings was very large. The exhibition building was thronged and the judges found it very difficult to make their way about to examine the goods. By persistent efforts, however, they succeeded and made the awards, giving very general satisfaction. Here it should be said that the exhibition was far more satisfactory, so far as quality was concerned, than any one anticipated and there seemed to be a desire prevalent to have the exhibition repeated in 1886. The Committee, Messrs. Isaac S. Crane, J. H. M. Cook and Rufus F. Harrison, of Livingston Grange; Austen E. Hedden, C. G. Campbell and Milton H. Canfield, of Caldwell Grange, were untiring in their efforts in preparing for and managing the exhibition and merited the praise bestowed upon them for their success by the organizations they represented and those of the public that attended the exhibition. Financially, also, the affair was a success.

Considerable effort has been made to gather crop statistics that would be of interest and value, but the effort has been successful only in a small degree. In truth, but few farmers in this vicinity can tell with accuracy how much land they cultivate or how much is devoted to each crop. When further details are asked for, such as to the quality of manure used, the cost of cultivation and the method of seeding, cultivating and harvesting, only vague, unsatisfactory and confusing answers are received.

In reference to corn, H. Frank Harrison, of Roseland, says for his locality that the yield was seventy-five per cent. as compared with last year and that it amounted to twenty-five bushels per acre. The price per bushel of corn has varied from forty-five to fifty cents. He says the yield of potatoes was not more than sixty-five or seventy per cent. as compared with the preceding year and the quality not as good. Per acre the yield was about 100 bushels, and they have ranged in price from seventy to ninety cents.

Cabbage turned out well. The fall weather was favorable and the growth good.

Apples were a failure. As it was the unproductive year in this vicinity, not much was looked for.

Austen E. Hedden, of Verona, reports for his locality :

per bushel December 1st, 55 cents.

Oats.—Yield compared to last year, 100 per cent.; average yield per acre, 35 bushels; number of acres under cultivation, 350; price per bushel 42 cents.

Wheat.—Yield compared to last year, 45 per cent.; average yield per acre, 23 bushels; number of acres under cultivation, 100; price December 1st, \$1 per bushel.

Cabbage.—Yield compared to last year, 120 per cent.; average yield per acre, 3,000 heads; number of acres under cultivation, 50; price per 100 December 1st, \$4.

Apples.—Yield compared to last year, 40 per cent.; price per bbl. December 1st, \$2.50.

Pears.—Yield compared to last year, 120 per cent.

Peaches.—Yield compared to last year, 75 per cent.; number of acres under cultivation, 20.

Strawberries.—Yield compared to last year, 100 per cent.

Blackberries and Raspberries.—Yield compared to last year, 100 per cent.; yield of clover hay per acre, 1½ tons; timothy per acre, 1 ton.

Remarks.—Wheat crop poor. Bad fall for sowing; very little sown.

Isaac S. Crane, of Livingston, reports as follows:

Corn.—Yield compared to last year, 125 per cent.; average yield per acre, 40 bushels (shelled); number of acres under cultivation, 500; price per bushel December 1st, 47 cents.

Oats.—Yield compared to last year, 90 per cent.; average yield per acre, 30 bushels; number of acres under cultivation, 600; price per bushel December 1st, 35 cents.

Wheat.—Yield compared to last year, 30 per cent.; average yield per acre, 5 bushels; number of acres under cultivation, 125; price per bushel December 1st, \$1.

Potatoes.—Yield compared to last year 75 per cent.; average yield per acre, 35 barrels; number of acres under cultivation, 150; price per barrel December 1st, \$1.75.

Cabbage.—Yield compared to last year, 100 per cent.; number of acres under cultivation, 25.

Apples.—Yield compared to last year, 50 per cent.; average yield

per acre, 20 barrels; number of acres under cultivation, 150; price per barrel December 1st, \$1.50.

Pears.—Yield compared to last year, 100 per cent.; average per acre, 20 bushels; number of acres under cultivation, 25; price per bushel December 1st, \$1.

Peaches.—Yield compared to last year, 100 per cent.; average per acre, 30 bushels; number of acres under cultivation, 50; price per bushel December 1st, \$1.50.

Grapes.—Yield compared to last year, 110 per cent.; number of acres under cultivation, 10.

Strawberries.—Yield compared to last year, 80 per cent.; number of acres under cultivation, 10; average price per quart, 12 cents.

Blackberries and Raspberries.—Yield compared to last year, 80 per cent.; average price per quart, 10 cents.

Yield of clover hay $1\frac{1}{2}$ tons per acre.

Timothy, $1\frac{1}{4}$ tons per acre.

Drought in May and June cut the hay crop short.

Were it not for the heavy crop of corn-fodder and corn-stalks there would have been suffering from lack of fodder.

In estimating apples, young orchards not bearing are included, reducing the average yield.

REPORT OF LIVINGSTON GRANGE, No. 104.

BY WM. DEECKS.

Livingston Grange reports an active and increasing membership. Meetings are held on alternate Thursday evenings throughout the year; questions relative to general farming are freely discussed and the experience of individual members given.

Last year's crop reports were favorable with the exception of hay and wheat, the latter being in many cases an entire failure. The yield of corn and potatoes was above the average.

This being a milk-producing district, most of the farmers are heavily stocked and stable manure is made in large quantities; still the farmers find it pays to supplement the home product and the various commercial fertilizers are freely used. During the year several car-loads of special fertilizers have been purchased on the co-operative plan and mixed by members to suit their several purposes, from which

also. It is expected that great benefit will be derived from a series of lectures to be delivered in the Grange this winter by experienced and competent farmers and specialists. Since the inauguration of our Grange in 1879 great improvement is noted in the manner of farming and in the quality and quantity of crops produced. The advantages arising from an interchange of ideas, and the intelligent discussion of various subjects brought before the Grange, are plainly perceptible, and farmers are learning to think better of their calling and of each other. In short, the Grange has come to stay and is doing a good work in the community.

GLOUCESTER COUNTY.

GLOUCESTER COUNTY AGRICULTURAL SOCIETY.

OFFICERS OF THE BOARD FOR 1885.

<i>President</i>	SAMUEL MOORE.....	Harrisonville.
<i>Vice-President</i>	CHALKLEY DUELL.....	Wenonah.
<i>Secretary</i>	GEO. H. GAUNT.....	Paulsboro.
<i>Treasurer</i>	THOMAS BORTON.....	Mullica Hill.

BOARD OF DIRECTORS.

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WILLIAM E. SHOCK,	ELMER BRADSHAW,	JOSEPH B. ROE,
	BIRDSSEL SICKLER.	

DELEGATES TO STATE BOARD.

GEO. H. GAUNT.

FRANK B. RIDGWAY.

Gloucester County Board have held four meetings during the year; first, annual meeting, January 3d; second, July 18th; the State Secretary having kindly promised to be with us and address the meeting, the farmers came out in goodly numbers to hear him, but unfortunately he was so much indisposed that he could not be with us, so the meeting was converted into an experience meeting, and brought out considerable practical information. Third meeting was held at Woodbury, October 31st, when Mr. P. T. Quinn, our State Secretary, was with us, and gave us a very good practical talk, which was much appreciated by the audience. Our fourth meeting was held at Mullica Hill, December 5th, when there were some practical essays read and interesting discussions, showing that farmers are anxious for an advancement in agriculture.

HUNTERDON COUNTY.

HUNTERDON COUNTY BOARD OF AGRICULTURE.

OFFICERS OF THE BOARD FOR 1886.

<i>President</i>	JOHN T. COX.....	Readington Grange.
<i>Vice-President</i>	NEWTON B. RITTENHOUSE.....	Sergeantsville Grange.
<i>Secretary</i>	E. M. HEATH.....	Locktown Grange.
<i>Treasurer</i>	JOSEPH WILLIAMSON.....	Sergeantsville Grange.

BOARD OF DIRECTORS.

JAMES LANE.....	Readington Grange.
E. E. HOLCOMB.....	Ringoes Grange.
JOSEPH HAGAMAN.....	Sergeantsville Grange.
URIAH SUTTON.....	Locktown Grange.
JOHN W. LAQUERE.....	Kingwood Grange.
H. F. BODINE.....	Pomona Grange.

DELEGATES TO STATE BOARD.

H. F. BODINE,

J. B. FISHER.

SOCIETIES REPRESENTED.

Readington Grange, Sergeantsville Grange, Ringoes Grange, Locktown Grange, Kingwood Grange, Hunterdon County Pomona Grange.

HUNTERDON COUNTY CROP AND SOCIETY REPORT.

BY H. F. BODINE.

In making this our first report to the State Board, it may be expected that we will not make as good showing as reports from counties that have been organized longer than we. Our County Board was organized November 14th, 1885, by Hunterdon County Pomona Grange, with an invitation to the Hunterdon County Agricultural Society to meet with us in the formation of the County Board. The Society sent a delegation of their stockholders to attend

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run down ; but the members of the County Board thought they did not care to place their money and time in building up the old Society, hence their delegation withdrew and left the work of organizing entirely with the Patrons of Husbandry, as will be seen by referring to the Societies represented. Accordingly an organization was effected on the 21st day of November, 1885. The Board met and adopted their by-laws, and we trust effective work for the agriculturists of our county will be accomplished.

There are five subordinate Granges in the county, and it had been our intention to give a report of each one and their doings, but circumstances have been such that we have been unable to come at a uniform system, hence we can only say that we believe all of them are doing well, and if the farmers generally could remove their prejudice and become members of the Grange, an untold amount of good would accrue to them. We have also a Pomona Grange that is doing good work for the agriculturists that are interested in its workings.

The Grange has done much for its members as an educator. They are especially awake to the matter of commercial fertilizers, what they are, how to use them, &c. We hope some time to give a fuller report of the Grange work in our county, as we notice hitherto it has been left unreported.

The yield of wheat throughout the county was not as good this season as for the past few years ; rye crop good ; oats fair ; buckwheat better than for the past five years, bringing the price of flour down to \$2.00 per hundred weight ; corn crop excellent ; potatoes not more than two-thirds of a crop ; hay crop short, but of excellent quality ; apples not more than half crop, but kept well. There are a number of persons engaged in raising small fruits, but it is difficult to get from them either the yield per acre or the amount of money received for their crop. Mr. Asa Fisher sold 800 pounds of dried raspberries at one of the stores a few days ago for 18 cents per pound. These were grown on a very small piece of ground.

There are four creameries in our county, with a capacity of 10,000 pounds each. These are all running and doing fairly well. It is very difficult to gather a correct report of the number of pounds of poultry, pork, &c., produced, as the farmers each send the products of the farms to market and too much time would be consumed in aggregating a report.

and bringing into our county great sums of money—the acreage being increased yearly. Below I give you the number of baskets shipped from the county as near as can be ascertained. On

Lehigh Valley Railroad.....	202,840
New Jersey Central.....	251,397
Pennsylvania.....	180,000

It is thought by the best judges that taking into account what was sold in local markets and used in families, a million of baskets is not an exaggerated amount. The industry is a growing one, and the desire to set trees has never been equalled; the nursery trees have all been sold, and growers are unable to get all they need for setting the coming spring.

POMONA GRANGE, No. 8, OF HUNTERDON COUNTY, NEW JERSEY.

OFFICERS FOR 1886.

<i>Master</i>	DAVID BODINE.....	Locktown.
<i>Overseer</i>	JAMES S. KERR	Kingwood.
<i>Lecturer</i>	JOHN T. COX.....	Readington.
<i>Steward</i>	ISAAC H. HOFFMAN.....	Locktown.
<i>Assistant Steward</i>	J. R. HARTPENCE.....	Sergeantsville.
<i>Chaplain</i>	N. B. RITTENHOUSE	Sergeantsville.
<i>Treasurer</i>	URIAH SUTTON	Locktown.
<i>Secretary</i>	F. S. HOLCOMBE	Mount Airy.
<i>Gate Keeper</i>	T. W. SUTTON.....	Kingwood.
<i>Ceres</i>	MRS. EMILY BODINE.....	Locktown.
<i>Pomona</i>	MRS. MARY J. HOFFMAN.....	Locktown.
<i>Flora</i>	MRS. MARY BLACKWELL.....	Mount Airy.
<i>Lady Ass't Steward</i>	MRS. HANNAH C. HOLCOMBE.....	Mount Airy.

EXECUTIVE COMMITTEE.

PETER HOPPOCK, Locktown.	JOHN T. COX, Readington.
T. W. SUTTON, Kingwood.	E. E. HOLCOMBE, Mount Airy.
J. B. FISHER, Sergeantsville.	

We have about fifty-three members in good standing in our Grange at this time; we meet four times in the year, as follows: on the fourth Thursday in January and April and second Thursday in August and third Thursday in October. Our meetings are held in the different subordinate Grange Halls in the county. At the meeting in April, held at the hall of Sergeantsville Grange, No. 101, a committee of five was appointed, one from each subordinate Grange in the county, to collect exhibits from the farm and garden and bring to the August and October meetings. At the meeting held in the hall of Locktown Grange, No. 88, in August, we had quite a fair exhibit, and the committee was requested to do what they could among their members to collect and bring a good exhibit to the next meeting in October, which was held at the hall of Ringoes Grange, No. 12. We had one of the grandest exhibits in point of variety and quality that we have seen in our county in many years, including grain, fruit and vegetables, thus showing what a few farmers could do. We have also bought some seventy-five bushels of clover seed through our agent, Judge Holcombe.

REPORT OF F. S. HOLCOMBE, MOUNT AIRY, AND BENJAMIN E. TINE,
STANTON, DELEGATES FROM THE HUNTERDON COUNTY AGRICULTURAL SOCIETY.

We herewith present to the State Board of Agriculture a general summary of agricultural interest of crops of grain, fruit, pork, poultry, vegetables and a few manufacturing establishments in the county for the past year.

One of the leading products of the soil of this county is fruit, and the leading fruit in dollars and cents is peaches.

The farmers over the entire county are engaged in the cultivation of peaches, in connection with their other farm industries, and some farmers make them a specialty.

The past season, while not entirely satisfactory to the growers, was fairly good. The quality of the fruit was not up to the usual standard of Hunterdon county peaches, occasioned by cold, wet weather in the early part of the season, causing the leaves to blight, followed by dry

weather, which was in turn followed by heavy rains and winds, doing great damage by loosening the ground around the trees in the orchards, blowing off the half-grown peaches, blowing over and twisting loose the trees ; this was followed by unseasonably cold weather in August, checking the growth of peaches. Notwithstanding all these drawbacks, the crop, in the number of baskets produced, was considerably in excess of the previous year ; but, owing to the inferior quality, the average price was not as good, entailing on the growers more work in handling without receiving any more money. The crop in round numbers will amount to over 850,000 baskets, netting the growers \$500,000 or more. In the lower end of the county, through the kindness of John A. Anderson, Superintendent of the Belvidere Division, we are furnished with a copy of baskets shipped upon that road from the different stations :

Holland	889
Milford.....	3,697
Frenchtown	12,793
Tumble.....	6,364
Byram.....	10
Bulls Island.....	33,817
Stockton	35,617
Lambertville.....	13,771
Ringoes	8,227
Total	115,185

Some five or six cars of peaches were shipped direct from Lambertville to Cincinnati, Ohio, affording a good market for the farmers.

Apples.—In the northern part of the county, the apple crop was the poorest in several years, in quantity and quality of fruit, and the fruit rotted badly ; in the southern part of the county the crop was better, but the whole county would not average one-half of a crop. The most productive variety is Smith's cider apple. Some orchards set lately, are nearly all cider apples.

Small Fruits.—Considerable attention is being paid to the cultivation of small fruits, such as strawberries, raspberries, blackberries, currants, cherries, plums, &c. ; the plum crop being the largest for many years. The cultivation of these small fruits has proved quite profitable ; most of the fruit finds ready sale in the local markets of the county ; northern part to Easton ; southern to Flemington, Lam-

are scattered all over the county, and the number is increasing yearly, and yet there is a demand for all. Asa H. Fisher sold 800 pounds dried raspberries for 18 cents a pound, making \$144. Thomas Hunt, of Lambertville; C. Hunt, Stockton; Mrs. William Drake, Mrs. D. Bellis, the Everitts, near Flemington, and a great many others whose names are not known, are all large producers.

Dairy.—Another leading industry in our county is dairying. In addition to butter made on the farms, a great deal of milk and cream is shipped to New York, and during the season to different summer resorts along the sea-shore. The daily shipments will average 2,000 quarts. There are in the county eight creameries, shipping milk and cream, that buy an average of 15,000 quarts per day, and four factories making butter and cheese, that receive an average of 4,000 pounds each per day.

Wheat.—The crop was below the average, caused mainly by the unfavorable weather of winter and spring; a few fields in favorable localities yielding as high as 30 bushels per acre, while the average will not reach over 15 bushels per acre; selling at the present time 90 cents per bushel. Jonathan Hunt, near Ringoes, raised 30 bushels of wheat, averaging 20 or more bushels to the acre about 1,000 bushels of oats. He believes in fertilizers for wheat. Several farmers are trying phosphates on their oats crop, and are paying for them.

Rye.—The crop of rye was very good according to the average. The splendid yield of wheat the previous year induced the farmer to plant a large acreage of wheat in the fall of 1884, and consequently a small acreage of rye, to the loss of the farmers as the average is shown; selling at this time at 56 cents per bushel.

Corn.—A splendid crop of corn was raised except where destroyed by the cyclones the first of August, and by local drought in the eastern part of the county, averaging from 30 to 80 bushels per acre according to quality of soil and cultivation, although the old-fashioned farming, planting in rows with drill or new corn in hills, will produce from 100 to 120 bushels per acre. Some very early and late sweet corn have been raised in southern portions of the county for market. Clark Hunt, of Stockton, and Thomas Hunt, of Lambertville, being the largest growers. A good many farmers are raising early and late planting. A good many farmers

other markets in the county. And also find it quite profitable to raise for early pork.

Oats.—The yield of oats was fairly good, but damaged some in gathering by the wet weather. Selling from 28 to 32 cents per bushel at home markets.

Buckwheat.—There is considerable buckwheat grown in the county, being sown quite extensively in young peach orchards, and more than usual this year on account of the failure of wheat in some localities, and the large number of new peach orchards set last spring. The crop was generally good, the largest for several years, some farmers plowing up their stubble fields where the grass failed, and raising from 200 to 600 bushels, yielding from 20 to 40 bushels to the acre. Selling at 50 cents per bushel.

Flax and Barley.—This county formerly produced large quantities of flax, but at the present time the acreage is small; the yield the past season was fair. Barley not as much raised as formerly, but on good soil is more profitable than oats.

Hay.—The crop of hay was one of the smallest gathered in the county for a number of years, resulting in high prices—as much as \$20 per ton being paid in the fields; average not more than 1½ tons per acre.

Potatoes.—But few sweet potatoes planted, some farmers raising enough for their own use, while white potatoes, early, were excellent in quantity and quality; some very late planting was a small crop, owing to drouth, but the crop was a fair average, selling now at 50 cents.

Cabbage.—Cabbage is more grown every year for home consumption, and the year 1885 was the largest for a number of years, many selling for 1½ to 5 cents per head for winter use, and a large quantity unsold at freezing time for want of purchasers, very plainly showing our law makers at Washington the necessity of protecting the agricultural interests of the United States, in the raw material as well as the manufactured article, for the farmer produces the raw material that enters into all manufactured goods of every kind.

Tomatoes.—Tomatoes in the southern portion of the county, within a radius of six or eight miles of Lambertville, are raised quite extensively for manufacturing purposes. There is but one canning factory in the county, where there ought to be several. The one in Lambert-

He has put up the past season 242,000 cans ; made 850 barrels of catsup ; bought 22,000 bushels ; paid for labor in the factory \$3,212 ;

States. The steers were bought in Pennsylvania and New York when from six months to two years old, and sold to the farmers, who feed them until two and three years old, when they are mostly disposed of to local butchers; the price for January being $4\frac{1}{2}$ to 5 cents per pound, live weight.

Calves.—Calves, except thoroughbreds and high grades, are nearly all sold for veals, and find a ready market in New York, Newark, Elizabeth, Trenton and local towns; very seldom any going to Philadelphia. They have net the farmer for the last five months from $6\frac{1}{2}$ to $8\frac{1}{2}$ cents per pound, delivered at the railroad station.

Sheep.—The keeping of sheep for the raising of lambs for the New York market is growing more and more every year, and is one of the principal and profitable features of the agricultural industries of the farmers of our county who are engaged in it. Most of the lambs were bought by the dealers the past season at prices bringing \$4.50 to \$5.50 per head. Some farmers who had their ewes to breed very early lambs and took extra care of their flocks, had their lambs sold in New York from \$7 to \$10 per head. The ewes used for breeding market lambs are cross-bred sheep brought from the West. They are usually bred to a thoroughbred Southdown buck. Several flocks of thoroughbred Southdowns are kept in the county, and their owners have a ready market for their buck lambs among the market lamb raisers. The owners of the Southdown flocks are: L. A. Exton, Clinton; J. and P. Rockafellow, Lebanon; J. D. and M. Smith, Sunnyside; Charles Hoff, Centerville; and F. S. Holcombe, Mount Airy. Following we send you report of Jonathan Higgins' sheep for 1885: He bought 52 sheep in the Fall of 1884 for \$216; the lambs were not early; sold 48 for \$290.49, 8 for \$38, and 10 for \$43.50; total, \$361.99; sold 51 sheep for \$272.35; wool—200 pounds—\$52; total, \$686.34; net profits, \$470.34. I could give others not so good, and a good many much better, who sold early lambs for \$10 in the sheep pen.

Swine.—The leading breeds among the swine raisers in the county are Poland, China, Berkshire and Jersey Reds; but nearly all other improved breeds have their representatives and advocates. The most of the pork is marketed as pig pork from six to nine months old. Prices have been very low the past four months, netting from 4 cents for coarse heavy to $6\frac{1}{2}$ for fancy light.

Poultry.—Considerable attention is being paid by farmers and

artificial means, incubators, building warm roosts, and taking better care of their fowls in cold winter weather ; some farmers feeding three times a day the year round for the purpose of gathering in the golden eggs, thinking it pays better than raising chickens.

Turkeys.—Turkeys are generally raised at a profit if well attended to ; farmers, for Thanksgiving, getting from home dealers 14 to 16 cents ; for Christmas, 13 to 15 cents per pound ; while those shipping to New York for the Christmas market received about 10 cents per pound net.

To more clearly show the agricultural interests of our county we herewith append a few reports of what different individuals have done in the various industries. J. W. Duckworth, Pattenburg, N. J., sends his report of peaches, as follows: Planted trees fifteen feet square, and planted 1,465 trees ; the year that they were three years old gathered 700 baskets, net gain \$585 ; fourth year 1,000 baskets, net gain \$1,050 ; fifth year 3,400 baskets, net gain \$1,700 ; sixth year 2,400 baskets, net gain \$1,300 ; seventh year 1,900 baskets, net gain \$1,200 ; eighth year sold them on the trees in the orchard for \$600. He also sends the following: "Two years used barnyard manure broadcast ; for two years used Lister Brothers' ammoniated dissolved bone—about one ton each season. The other years of bearing did not use anything." His orchard contains a little less than eight acres of ground. The amount realized from the orchard is \$6,435 ; this income was derived principally from six varieties—eleven varieties were planted out. There are others in the county who have had great success in raising and selling their peaches for fancy prices but will not give figures.

William H. Fulper, one of our enterprising merchants of Flemington, sends the following: He has received since September 1st, 1885, 76,212 pounds pork ; 50,200 pounds poultry ; 12,050 pounds of dried fruit. Bought during the year ending February 1st, 785,930 eggs. Sold the past season 90,500 peach baskets and covers.

Another enterprising firm, Richards & Sutphin, sends the following: Since November 1st, 1885, to February 1st, 1886, received 33,750 pounds of poultry ; 8,000 pounds dried fruits ; 65,000 pounds dressed hogs. During August and September sold 43,000 peach baskets and covers ; and during the year of 1885 bought 150,000 eggs.

Nevius & Connet have handled over \$50,000 worth of produce in 1885.

Hunterdon county is perhaps the largest peach-growing county in the State. Peach men have bought all the trees in the nurseries already; the demand is greater than the supply, and the question of the day is, Can we have too many?

The greatest need of an agricultural community is to have more manufacturing interests established in our county. As it is a well-established fact that the Eastern farmer cannot compete with the Western farmer in the raising of grain and meat, the Eastern farmer, to be successful, must confine himself to the production of such articles as cannot be raised in the West or that will not bear transportation for long distances, and the nearer the market for such articles can be brought to the farmer the more his profit will be, and the only way to create a home market is to have a well-established manufacturing population. To the establishment of such industries we have the following inducements to offer: A diversity of production capable of furnishing food to a large population at a moderate price; abundant water-power, proximity to the coal fields of Pennsylvania, affording cheap fuel; nearness to the tide-water, and abundant railroad facilities, affording cheap transportation for raw material and the finished products of the factory.

The society held their annual fair September 22d, 23d and 24th. On account of threatening and cold wintry weather the first two days, the attendance was small. The last day, with better weather, brought a good attendance. The exhibition was well filled in all of the departments, and was successful except financially.

Receipts from all sources were.....	\$5,792 51
Disbursements.....	5,780 35
	<hr/>
Balance in hand.....	\$62 16

HUNTERDON COUNTY AGRICULTURAL SOCIETY.

OFFICERS FOR THE YEAR 1886.

<i>President</i>	JONATHAN HIGGINS.
<i>Vice President</i>	JOHN L. JONES.
<i>Recording Secretary</i>	JOHN L. CONNET.
<i>Corresponding Secretary</i>	WILLARD C. PARKER.
<i>Treasurer</i>	JOHN H. DEMOTT.

BOARD OF DIRECTORS.

F. S. HOLCOMBE,	J. B. HOPEWELL,	JOSEPH HAINES,
SIMPSON S. STOUT,	HIRAM MOORE,	B. E. TINE,
	DAVID D. SCHOMP.	

MERCER COUNTY.

MERCER COUNTY BOARD OF AGRICULTURE.

OFFICERS OF THE BOARD FOR 1886.

<i>President</i>	RALPH EGE.
<i>Vice President</i>	THEO. CUBBERLEY.
<i>Corresponding Secretary</i>	FRANKLIN DYE.
<i>Treasurer</i>	CHARLES H. OLDEN.
<i>Recording Secretary</i>	J. M. DALRYMPLE.
<i>Superintendent of Fair</i>	FRANKLIN DE COU.

BOARD OF DIRECTORS.

JAMES A. HENDRICKSON.....	Ewing Grange.
A. L. HOLCOMBE.....	Hopewell Farmers' Club.
WILLIAM VAN PELT.....	Mercer Grange.
JOHN F. PHILLIPS	Princeton Agr'l Ass'n.
J. B. HORN.....	Pennington Grange.
G. W. JOHNSTON.....	Lawrence Grange.
FRANKLIN DE COU	Hamilton Agr'l Ass'n.
WILLIAM S. RIGGS.....	East Windsor Agr'l Ass'n.
P. A. CUBBERLEY.....	Hamilton Grange.

SOCIETY AND CROP REPORT.

BY FRANKLIN DYE.

It is asserted that "man learns by failure." If this is true one would suppose the tillers of the soil were possessed of a vast amount of knowledge. Trial succeeds trial, experiment follows experiment, the last attempt frequently succeeding no better than the one that preceded it; as soon as one difficulty is overcome another is met that baffles even scientific skill; and this process goes on through the years and from generation to generation. Has no progress, then, been made? The history of agriculture for the last fifty years will give a satisfactory answer. If the farmer, the market gardener and

One reason for renewed experiments in farming operations is to discover some method in stock and crop raising, by which the cost of production may be reduced and the profits increased; a system whereby more profitable returns can be realized for labor and capital invested.

A second reason is found in the increasing and diversified enemies to success in agriculture, consisting of adverse climatic influences, and new and increasing depredations of insects. The latter are found to exist in so many forms, and to have their modes of attack so hidden as to defy the skill and even the notice of the ordinary farmer until the mischief is done. A third obstacle in the way to success, and one that claims our serious attention as farmers, is the scarcity of efficient farm laborers. Farmers living near to our manufacturing centers find that the American young men that were once their strong-arm in carrying on farm work, are leaving the farm and seeking employment where wages are higher, or work more respectable (?). In this county we are restricted to the few colored men the brick manufacturers do not employ, and the unskilled Hungarian and other foreign laborers. It may be said in reply, pay higher wages! In most cases farmers are paying as much as they can afford, and if a true estimate of farm wages and the work required, with the wages paid by other industries for the work done, with the necessary expenses to the workingman in each case, could be made, I believe that it would be seen that the farmer is paying as much as the other employers. In other words, the expenses for living to the laboring man and his family, are greater in other trades than on the farm; these deducted from the amount left will not vary much in either case. Of course, this does not apply to the labor of the artist.

The Hon. Wm. Walter Phelps, in his address before this Board two years ago, stated "that each person engaged in farm work in New Jersey, in 1879, earned \$500, being more than \$100 more than is earned by any such labor in any other State in the Union." He also stated that "one advantage of the system of protection is, it increases the number of those who leave the ranks of agriculture and engage in other pursuits."

In seeming contradiction to the first extract above stated, and as resulting from the second, the report of the National Bureau of

in New Jersey, owing very largely to the fact that other industries pay better wages than farming; hence, there is a scarcity of farm labor in the State which is considered deplorable." The "system of protection," which in Mr. Phelps' view is (to be) "advantageous to agriculture," is, in the view of the Bureau named, producing "deplorable" fruit. Now, if farm laborers receive more in New Jersey than in any other State, why is labor on the farm more unpopular here than in other States? It is not the farm labor so much that is unpopular, but the larger wages paid by other industries that is popular. The bait takes the fish.

The advantages that accrue to agriculture from protection by attracting to other callings those engaged in it, are not so apparent as we could wish. There are advantages to agriculture from protection; with those we are not now dealing. The difficulty has been and is, that while we were building up our manufacturing industries, unwarranted inducements have been presented to foreign immigration so that for every place made vacant on farms in the East by manufacturing, scores of immigrants, from continental Europe especially, have found homes in the West, occupying and tilling its rich productive soil. Transportation facilities have increased with the population and even anticipated the produce to be removed, thereby adding to the crops of the older States the enormous yields of the new, produced at a much less cost than we can possibly grow them; so that with all the manufactories in operation among us we are driven to the wall.

A remedy for existing evils, to some extent at least, is suggested in three particulars:

First. Stop forever land monopoly; we do not want the English system of land ownership in this country.

Second. Freight charges on our through lines should be so regulated by law that discrimination against short distances should not be so great as it is; and this, perhaps, will be better accomplished by State than by Congressional legislation.

Third. Is not that system of protection unfair that is of itself a sufficient inducement to attract a man from one into another calling? Such a system places the producer second to and to a degree dependent on the manufacturer and the middle-man. This fact is virtually conceded by Mr. Phelps, proved by the investigations of the Bureau

and corroborated in the experience of our farmers to-day. A remedy will not be found, however, by returning to free trade, but rather in so adjusting the tariff as to favor, as far as may be possible, the producer and the manufacturer alike; in so regulating it that not protection but preference shall determine in the choice of a calling. It will not be well for manufacturers and protectionists to antagonize the farmers' interests in the adjustment of the tariff.

Let us now return to the report of the Bureau of Statistics. The gentlemen composing the Bureau institute a comparison between the prices paid on the farm in 1866 and in 1885, as follows, as taken from the *Trenton Times* :

"FARM LABOR IN JERSEY.—The wages of farm labor in New Jersey is shown in a report just issued by the National Bureau of Statistics, based on observations made from 1866 up to the present year. During the year 1866 farm laborers in New Jersey received an average salary of \$32.27 per month without board and \$18.98 per month with board. During the year 1885 the monthly salary without board in the State was \$23.60 and with board \$14.10, which shows a marked decrease since the former year, owing, doubtless, to the frequent business depressions. In harvest the wages in New Jersey during 1866 averaged \$2.68 per day without board and \$2.38 with board, while in 1885 the rate decreased to \$2.04 per day without board and \$1.65 with board. The day wages of ordinary farm labor in New Jersey in 1866 was \$1.68 without board and \$1.20 with board. The rate in 1885 was \$1.17 per day without board and \$0.83 with board. The report mentions the fact that farm labor is very unpopular in New Jersey, owing very largely to the fact that other industries pay better wages than farming, hence there is a scarcity of farm labor in the State which is considered deplorable."

These differences seem to be considerable, and if placed before workmen as stated (if the above is a fair extract of the report), will convey a wrong impression, for no comparison of the cost of living in 1866 and in 1885 is made as it affected the laboring man, nor of the prices of farm crops, then and now, from which the farmer must meet his obligations. To pay \$32.27 without, and \$18.98 with board, in 1866, the farmer sold his wheat at \$2.85 and \$3.00 per bushel; his corn and potatoes, at 70 cents; his oats, at 50 cents; his apples at \$2.40 per barrel; his pork for 17 cents per pound, and so on; while to pay \$23.60 without, and \$14.10 with board, in 1885, he can

time); 40 cents for corn, 50 cents for potatoes, 35 cents for oats, \$1.25 per barrel for apples, 4 $\frac{1}{4}$ to 5 cents per pound for his pork; without going through the whole list of farm produce, it will be seen that the farmer was as able to pay the higher wages of 1866, as he is the smaller amount in 1885.

Again, the workingman paid for the necessities of life, in 1886; for coffee, 50 cents per pound, 25 cents now; tea, \$2.00 and up, 50 cents now; sugar, 15 to 20 cents, 7 $\frac{1}{2}$ now; molasses, \$1.25 to \$1.50, 70 cents now; chocolate, 70 cents, 44 cents now; 64 cents for ginger, 30 cents now; 25 cents for cheese, 16 cents now; 15 cents for starch, 10 cents now; for flour \$6.00 to \$8.00 per hundred, \$2.50 to \$4.00 now; 50 cents for butter, 30 cents now; 28 cents for ham, 12 $\frac{1}{2}$ cents now; 25 cents for lard, 10 cents now; 50 cents for vinegar, 25 cents now; for luxuries like tobacco, \$1.00 per pound. For wearing apparel, I only give a few articles, as calico, 25 cents then, 5 cents now; muslin, 30 cents, 7 $\frac{1}{2}$ cents now; drilling, 50 cents, 10 cents now; gingham, 40 to 60 cents, 8 cents now; cambric, 20 cents, 12 cents now; alpaca, 90 cents to \$1.70, 35 cents now; linen bosom, 50 cents, 25 cents now; spool cotton, 8 cents, 5 cents now; Kentucky jean, 60 cents, 25 cents now; brooms, 65 cents, 25 cents now; and other things in proportion all through the grocery, provision and dry goods list. That is, the workingman with his one-fourth to one-third higher wages, in 1866, had to pay from half to five times as much for the necessities of life as he did in 1885. From all this it will appear that the farmer is paying more wages, an amount that will go further for living purposes now, than was paid in 1866.

The statements of the Bureau, unaccompanied by any of the facts named, do injustice to the farmer, and will help to make farm labor more unpopular and the situation more deplorable in our State than it now is.

The report for the county will be given by townships as follows:

Lawrence Township has a soil composed largely of clay and gravel loam, on which the yield as compared to last year has been: Corn, 100; a heavy shower of rain and hail, accompanied with high wind, during the first of August, injured the crop in portions of the township, as did the wire-worm also in the spring, destroying the seed for three consecutive plantings; yield per acre, 60 bushels; price, December 1st, 40 cents; oats, wheat, etc. (see table at close of this report). Pears, peaches, grapes, strawberries, blackberries and raspberries not ex-

half ton was realized, owing to cold spring and want of rain in early part of summer. The potato crop was greatly injured in some cases by the wire-worm and the scab. In my own potato tests, with 18 varieties, the Early Rose, White Elephant, State of Maine and Blush were the heaviest yielders, planted April 25th-27th. As early as July 1st the wire-worms were found perforating the tubers of the earlier varieties; such general havoc from the pests named I have never before experienced nor seen; out of 14 varieties, planted on the above dates, none escaped serious injury, while the Burbank and St. Patrick, planted ten days later, were unharmed. The treatment of all was the same as to planting and cultivation; different fertilizers were used. While one of my neighbors, a large potato grower, had a similar experience to my own, two others, Thomas Allen and G. W. Johnston, report a yield of 300 bushels per acre. Mr. Allen states that 600 pounds of fertilizer alone produced more and smoother potatoes per acre than 400 pounds of fertilizer used in conjunction with stable manure, the manure applied broad-cast and plowed in.

Sugar beets, mangels and rutabagas not extensively grown; our farmers judge them not profitable to grow for feed, except in a small way as a change of diet. I. B. Stevens has grown carrots for a series of years successfully, realizing 40 cents per bushel.

Pear trees, especially Bartlett, have been killed by pear-blight, and some, both pear and apple trees, were stung in the fall of 1884 by the "pigeon tremex," all which died above the wound. Sheep are kept by but few farmers. Of hogs only a small surplus over that required for home use finds its way to the city markets. The dairy interest, covering as it does nearly the whole township, claims the pasture; the hay and the grain.

Some farmers continue to raise horses, and when we consider the prices at which horses are held, it would seem to be economy to grow more and buy less. The same is measurably true of cows. A strong inducement for raising our own, breeding only from the best and improving our herds thereby, instead of buying stock out of droves coming from we know not where, is, we will longer if not altogether escape the contagious diseases so prevalent in many sections. I know of no case of infectious disease in this township among horses, cattle or hogs.

Lawrence Creamery is in active operation during the summer season ; the cream is extracted by the centrifugal process.

Lawrence Grange, No. 40, is in working order and has held its meetings regularly, though its numbers have been sadly depleted by the death of many prominent and useful members, and the removal of others.

Ewing Township has, in the main, a fine responsive soil, giving a good return for liberal manuring and thorough cultivation. Along the Delaware river the soil is a sandy loam, changing to clay loam, red clay and, to some extent, red shale in the north. This is a productive township and has so many able, enterprising farmers in it who do not believe in being second to any other man in the same business, its agricultural, horticultural, stock and poultry interests are in a flourishing condition. Here, as in Lawrence, the dairy is receiving more attention. Numbers of farmers supply families in the city of Trenton with butter, serving it weekly at the door ; others convey the milk to the city daily, retailing it at 6 cents per quart in summer and at 8 cents in winter. William Hough has started in connection with his farming operations poultry raising by the incubator process. He reports the business not so well under way as to give a just statement of profit and loss ; believes the expenditures will overbalance the receipts thus far.

Wallace Lanning reports an experiment in corn-growing accurately made on three equal plots of ground. The rows in each case were $3\frac{1}{2}$ feet apart. On the first plot the kernels were planted one every 15 inches in the row ; yield of first plot, $89\frac{5}{8}$ bushels. The second plot was planted two kernels, $2\frac{1}{2}$ feet apart, in the row ; yield of second plot, $95\frac{2}{8}$ bushels. The third plot was planted three kernels in one place, $3\frac{1}{2}$ feet apart, in the row ; yield, $95\frac{5}{8}$ bushels.

The Ewing Grange is active and useful, with a substantial membership. Its meetings are held regularly. The Ewingville Driving Park Association, located at the village of Ewingville, has a superior track for developing the speed of the fine stock raised in the surrounding country. During the past year the Association held a fair and made a trial of speed witnessed by a large attendance of visitors. No detailed report of entries has been given.

Ewing crop report, by John V. Green. (See table, pages 330 and 331.)

Passing northward to *Hopewell Township*, we have a soil of red clay and shale until above Pennington where, while the shale is

past summer. Just when the grass and oat crops, leading ones of this section, needed rain a severe drouth prevailed which shortened the hay crop to such an extent that little if any will be sold. Corn held its own till fall rains came to its aid. S. B. Ketcham, who makes the crop report for Hopewell township south of and around Pennington, states: "The failure of both wheat and hay will cause great embarrassment to many farmers who are heavily mortgaged. Owing to protracted drouth the young grass in wheat and rye is more than half killed, making the outlook for hay crop the next year very unpromising. Several of our farmers are giving more attention to dairying—shipping the milk by the Bound Brook Railroad to Philadelphia."

Hopewell is a large township, and its farmers believe in organization. The Pennington Grange is transacting business of a co-operative character of much benefit to the members. Its meetings are held in Pennington. In the town of Hopewell is located Mercer Grange; its meetings are continued with interest and the business arm of the order sustained. For such farmers as are not associated in the Grange the Hopewell Farmers' Club, which has attained a history of great usefulness, affords opportunity for discussing farm topics which is appreciated by its members. The Secretary, J. M. Dalrymple, who makes the crop report for this township north of Pennington, writes:

"The breeding and raising of road horses is an important matter for the farmer, but is very much neglected. Many farmers in this section have discovered that the crossing of pure blood in the common herd of cattle for dairy purposes is of vast importance.

"Sheep husbandry is not general; a few farmers have been successful in the business, and have realized large profits therefrom.

"The shipments from Hopewell station of sheep, lambs and calves from July 1st, 1885, to January 1st, 1886, was 3,557 head.

"A growing interest is manifested in the improvement of swine. One member reports weight of heaviest hog, 630 pounds; another, 616 pounds. A very large increase in production is shown by shipments made. One dealer, R. Savidge, of Mount Rose, two miles from Hopewell, shipped 20 tons; another, 5 tons; with individual shipments estimated at 5 tons. Of poultry 60 tons were shipped. The shipments of fruit from Hopewell from July 1st, 1885, to January 1st,

1886, were 23,380 baskets peaches, 700 baskets apples, and 200 baskets pears ; and from Moore's station 553 baskets peaches, 2,187 baskets pears and 690 baskets apples. From Titusville 1,329 baskets peaches, 333 baskets pears and 1,860 baskets apples. Many baskets of peaches, pears and apples were taken to other stations out of the county.

"The amount of fertilizer used by the farmers amounts to over \$65,000. One dealer, R. Savidge, selling near 1,500 tons.

"One member of the Club reports the sale of products off of 75 acres of land as follows: 425 bushels of wheat, 700 bushels of shelled corn, 200 bushels oats, \$400 worth of pork, \$100 worth of hay and \$1,500 worth of stock."

The crop report for Hopewell is as follows:

South, by S. B. Ketcham; North, by J. M. Dalrymple. Mr. Dalrymple gives detailed statements of his experiments in growing corn and wheat with different fertilizers under direction of the State Experiment Station. This report should be studied in connection with the one made last year. (See report of State Board for 1884-'85, page 428). It will be seen, by reference to these figures, that nitrate of soda and superphosphate, at a cost of \$9.75 per acre, produced $4\frac{1}{2}$ bushels more wheat than did \$30 worth of stable manure per acre; and nitrate of soda and muriate of potash on corn, costing \$7.64 per acre, produced $7\frac{1}{2}$ bushels more than did \$30 worth of stable manure.

Number of Plot.	KIND OF FERTILIZER.	Amount Fertilizer per Lot.	Cost of Fertilizer.	YIELD PER ACRE.			
				Good Corn, Pounds.	Poor Corn, Pounds.	Total Weight, Stalks.	Measured Bushels, Shelled Corn.
1	Nothing.....			1,250	1,150	5,750	34.20
2	Nitrate of Soda.....	150	\$4 32	1,950	1,000	3,850	42 10
3	Superphosphate.....	350	5 28	4,200	710	5,100	70.10
4	Muriate of Potash.....	150	3 32	3,000	1,130	4,950	59.
5	{ Nitrate of Soda.....	150	\$4 32 } 9 58	2,550	1,180	5,660	53 20
6	{ Superphosphate.....	350					
7	Nothing.....			1,480	990	4,900	35.20
8	{ Nitrate of Soda.....	150	4 32 } 7 64	4,600	950	4,850	79.20
9	{ Muriate of Potash.....	150					
10	{ Superphosphate.....	350	5 26 } 8 58	3,750	980	5,600	67.40
11	{ Muriate of Potash.....	150					
12	{ Nitrate of Soda.....	150	4 32 } 12 90	3,250	1,060	5,280	61.40
13	{ Superphosphate.....	350					
14	{ Muriate of Potash.....	150	3 32 } 1 50	1,550	1,060	4,650	37.20
15	{ Plaster.....	400					
16	Fine Barn-yard Manure... 20 loads		30 00	4,100	820	5,300	71.50

Variety of corn planted, Cloud's Early Dent. Planted in rows $3\frac{1}{2}$ feet wide, one grain every 14 to 18 inches in row.

Soil, red shale. High, gently sloping to southeast.

Texture and character of surface-soil, loose.

Character of sub-soil, red shale and small stone.

Soil best suited to raising rye.

Remarks as to condition, previous cropping, tillage, &c. In 1884 wheat crop taken off. Grass did not take. When land was plowed for corn it looked like a barren field, no sod.

Sowed two-thirds of the fertilizers designated for each lot broadcast, and harrowed them in. After the corn was up and showed nicely in the row, put the balance, one-third, of fertilizer, mixed with three times its bulk of mellow earth, and applied it about the hills.

Practiced level culture with spring-tooth cultivator, except at close of season, when I plowed to the row once.

Date of harvesting, September 19th, cut up the corn.

October 20th and 21st, husked the corn and weighed it.

FIELD EXPERIMENTS WITH FERTILIZERS ON WHEAT, 1885.

BY J. M. DALRYMPLE, HOPEWELL, N. J.

Number of Plot.	KIND OF FERTILIZER.	Amount of Fertilizer, Pounds.	Cost of Fertilizer.	Grain, Pounds.	Straw, Pounds.	Weight of Grain and Straw, Pounds.	Measured, Bushels.
1	Nothing.....				480	850	6.
2	Nitrate of Soda.....	150			650	1,050	8.40
3	Superphosphate.....	350			710	1,450	12.20
4	Muriate of Potash.....	150			140	450	5.10
5	{ Nitrate of Soda.....	150 }					
	{ Superphosphate.....	350 }			1,130	2,150	17.
6	Nothing.....				280	650	6.30
7	{ Nitrate of Soda.....	150 }					
	{ Muriate of Potash.....	150 }			500	1,000	8.20
8	{ Superphosphate.....	350 }					
	{ Muriate of Potash.....	150 }			860	1,630	12.50
9	{ Nitrate of Soda.....	150 }					
	{ Superphosphate.....	350 }			680	1,450	12.50
	{ Muriate of Potash.....	150 }					
10	Plaster.....	400			40	350	5.10
11	Barn-yard Manure.....	20 loads.			1,240	2,000	12.40

Variety of wheat sown, Mediterranean.

Amount sown per acre, one bushel and three pecks.

Sown with drill and fertilizers applied at same time.

Date of sowing, October 15th, 1884.

Date of harvesting, July 11th, 1885.

Soil, situation and drainage, red shale, high, gently sloping to south.

Texture and character of surface-soil, loose.

Character of sub-soil, shale.

Soil is best suited for corn, wheat, oats and potatoes.

As to condition, previous cropping, tillage, &c., in 1883 and 1884, good crops of corn were grown on this land.

Weather, during experiment, not favorable. Poor crops in this section. Some farmers in spring plowed up their wheat fields, and planted them with other crops, on account of the poor stand of wheat.

I have endeavored to get from the nurserymen and florists of the county a statement of the business done by each, to present with this report; some have responded, others have not. The following is from

of nursery stock, growing a little, of considerable variety, including peaches, apples, pears, plums, etc.; evergreen and deciduous trees in variety. Smith's Cider is the leading apple; about 90 per cent. of our sales being of this variety; of peaches, Old Mixon Free, Moore's Favorite, and Crawford's Late.

Have shipped as far west as Nebraska, south to Texas, north to Massachusetts and Canada. Have not kept an account of sales lately, as we have been doing only a local trade; our business is apple growing more than trees; harvested about 5,000 bushels this year, 1885; about one-half going to the cider press.

The nursery trade is good only for fruit trees at present, ornamental planting being very limited. Have shipped an average of 800 Christmas trees to Philadelphia the last five years."

Princeton Township has a strong, productive soil, of varying character. Its bottom lands, especially along Stony brook, have been long noted for their large yield of natural grass, affording the best of pasture throughout the summer, and this is true along the course of this stream through Hopewell township.

William Y. Johnson reports 12 acres sown to rye:

Yield of grain 386 bushels, 33 lbs., @ 58 cents.....	\$226 49
Yield of 17 tons of straw @ \$11.00	188 98
Total.....	<u>\$415 47</u>
Average yield per acre, cash	\$34 62
Average yield per acre, rye	32½ bushels.
Average yield per acre, straw.....	1½ tons.

The Princeton Agricultural Association, the oldest of its class in the county, maintains its meetings; its Secretary, H. E. Hale, makes the following crop report. (See table, pages 330 and 331.)

From James Van Deventer, who has been in the nursery and fruit business for twenty-five years, the following is received: "The varieties of pears we find most profitable for market are Beurre Gifford, Clapp's Favorite, Bartlett, Seckel, Beurre Bosc and Beurre D'Anjou. There are other varieties valuable for family use. Plums and cherries do not do well with us and are not much grown, although they are doing better now than for some years past. The most popular varieties of apples are Rhode Island Greening, Baldwin, Smith's

Mr. Hale states he has realized the past year from an orchard of 2½ acres of apples of different varieties, a profit of \$50 per acre; trees standing in sod 21 years old; of pears of different varieties, 65 bushels per acre; sales, \$40; from a flock of 100 Black Leghorn chickens, 8,000 eggs; sold at a profit of \$1 for each fowl.

Passing eastward to *West Windsor Township*, we have a gravel loam soil devoted to mixed farming the township over. Some of the finest farms in the county are found in the vicinity of Dutch Neck. Land that forty years ago was thrown out to the commons has been brought, by the use of Squankum marl first, and, of recent years, the better grades of fertilizers, to a high state of fertility. Its heavy crops of hay, corn, wheat and oats are sold largely in Trenton. Local dealers also, located on the Pennsylvania Railroad, handle a portion of the crops named, besides the poultry and pork product of the township, shipping to Newark and New York markets.

T. D. Brokaw, of Dutch Neck, gives the following crop report. (See table, pages 330 and 331.)

East Windsor Township comprises the eastern part of the county. Its soil is gravel and sand loam. The growing borough of Hightstown is its capital. A population constantly increasing, with educational facilities for a large number of students, and manufacturing in various branches affords a home market for much of the produce grown in the township.

Since the last meeting of this Board the *West Windsor Township Agricultural Society* has been organized and much benefit it is hoped will be derived by its members from its proceedings. It has a membership of twenty-one. H. H. Riggs gives a statement of sales from an average flock of 150 head of Light Brahmas, Partridge Cochins, R. C. B. Leghorns, Plymouth Rocks and Wyandottes; for 4,529 eggs sold, \$98.97, and for chicks sold, \$318.49. A large per cent. of eggs sold were from thoroughbred stock for hatching chicks for breeders.

The nursery business carried on in this township is large. The firm of Charles Black & Brother, of the Village Nurseries, report as follows: No. of acres, 100; capital invested, \$25,000; No. of men employed, 15; sales annually, \$15,000. Kind of stock raised: all hardy fruit and ornamental trees, small fruits, plants and vines. Our heaviest sales are of peach trees and Wilson's early blackberry

Alabama. No traveling agents are connected with the firm. In connection with the above they have grown during the past year six acres of wheat, ten of rye, ten of corn, five of potatoes, two of tomatoes, two of cabbage, two of water and muskmelon, six of raspberries and strawberries, two of grapes, ten of apples and five of pears. The two latter are in sod, the apple orchard being pastured. Principal pests to apples, coddling moth; to pears, curculio; to grapes, rot and mildew; strawberries almost a failure owing to severe winter; selling price of raspberries eleven cents per quart. Pie plant thirty cents per per bunch.

There are several others engaged in the nursery business in the township from whom no report has been received.

William S. Riggs presents the following crop report. (See table, pages 330 and 331.)

Washington Township has a gravel and clay loam inclined to yellow clay subsoil, in some sections requiring thorough underdraining to produce paying crops; but with a good soil naturally, underdraining will pay as well as a good coat of manure on poor land requiring no underdraining, and be far more lasting in its effects.

Since the opening of the Pemberton and Mt. Holly Railroad a few years ago, marl has been brought continuously into the township, by which, with better methods and more thorough cultivation, the yield and quality of her crops has been greatly increased.

The leading crops are corn, oats, rye, hay, wheat and potatoes, about in the order named. Some farmers are turning their attention to small fruits and peach growing, excellent transportation facilities for which are afforded from Windsor, its capital, on the Pennsylvania Railroad, southern division, to New York and Philadelphia.

No crop report has been sent from this township. In neither Washington nor West Windsor townships is there a farmers' organization, which is to be regretted.

Hamilton Township has a soil in some parts well adapted to grain and grass, which is produced largely in the neighborhood of Hamilton Square, its capital. The western half of the township lying east and south of Trenton and Chambersburg has a sand and gravel loam soil, suited to early vegetables and small fruits; to the production of these, principally for the Trenton market, the farmers are giving their attention. One farmer from this section, Isaac De Cou, reports as

toes, 4 of watermelons, 25 of strawberries, 3 of apples and one-half acre of Bartlett pears. In connection with these, 100 head of Leghorn chickens are kept, from which, besides the eggs, 1,000 pounds of poultry were sold at 12 cents per pound; 20 geese, from which a profit of \$1.00 per head was realized.

Forty acres are devoted to grass for the accommodation of 35 head of cattle, which, while they afford diversion from berry-picking, have realized to their owner a profit of \$15 per head. Theodore Cubberley, of Hamilton Square, states a profit of \$273.61 from 6 cows devoted to fattening calves.

Peach growing is slowly coming to the front again in different parts of the county where it has been abandoned in the past. The large orchard of Messrs. Mount, Brother & Burke, near Mercerville, containing 9,000 trees, now in its third year of bearing, produced the past season 10,000 baskets, which sold at an average price of 70 cents per basket.

Hamilton has two farmers' organizations, Hamilton Grange and Hamilton Agricultural Association. The former is located at Hamilton Square, has a good membership and is active in various ways to benefit not only its members, but farmers generally.

The latter organization is located near Chambersburg, and has gained since it was organized, nearly two years ago, a history of earnest, good work among the farmers and fruit-growers of that section. Its President, Franklin De Cou, was the very efficient superintendent of the fair held by our Board last October.

The following crop reports are given for East Hamilton by Theodore Cubberley. (See table, pages 330 and 331.)

A number years ago Carlman Ribsam began in a small way the growing of plants, flowers, shrubs, etc., for the Trenton market. By the energy and skill of the owner, his business has grown with the city. His grounds, which were then on the Trenton commons almost, are now, though still in the same place, located on State and Wall streets, and the firm name is C. Ribsam & Son. They report 15 green-houses and 11 cold-frames, covered by 30,000 square feet of glass, under which are grown tropical, bedding and blooming plants for Trenton and vicinity. Sold the past season nearly 150,000 bedding and 5,000 tropical and blooming plants, besides retaining under glass

for cut flowers for the use of wedding parties, and for funeral decorations, about 30,000 blooming plants, which are furnished in such designs as may be required.

For heating the above, brick flues and hot water boilers are used, which require 135 tons of coal. Seven men are required here annually—12 to 14 in the spring. Recently they have added to their facilities for production 55 acres situated on Greenwood and Hamilton avenues. Here are three propagating hot-houses and four cold-frames, covered by 4,000 feet of glass. The stock here will exceed 500,000 plants, consisting of fruit, shade and evergreen trees; shrubs, blooming and ornamental; grape vines, small fruits and roots, of which the best standard, leading sorts adapted to this latitude are kept. Twelve men are here employed.

In connection with their flower garden and nursery, they have a commodious seed and implement store, located at No. 10 South Greene street, Trenton, where fresh and reliable field, vegetable and flower seeds may be obtained, also farm implements and garden tools and ornaments for the house and lawn. An annual catalogue is issued, which is forwarded to all applicants.

The Pomona County Grange is in active operation. Its meetings are held in different parts of the county, four times in each year. The Secretary, G. W. Johnston, gives the amount of purchases, for fertilizers chiefly, between \$6,000 and \$7,000.

The Mercer County Board of Agriculture holds on its way in the line of work for which it was organized. Four regular and two special meetings have been held during the year. At the regular meetings, current subjects connected with farm operations are discussed by the members, embracing stock breeding, feeds and feeding, poultry raising, manures and their application, best fruits and how to grow them, most approved variety of grain and methods of planting and cultivation, bee culture, improved machinery, and humbugs.

At the February meeting, a very instructive address was made by J. H. M. Cooke, of Caldwell, N. J., on "Bee-keeping for farmers." At the August meeting, William R. Ward, of Newark, delivered an address to the Board, on "Fruit culture for the family and market;" he spoke in respect to soil, culture, insect enemies and remedies in fruit culture; giving also suggestions on "cold storage."

At the November meeting, it was the privilege of the Board to listen to Dr. E. M. Hunt, on "Farm animals and their care." The

information gained by our members on the general care of stock, so as to preserve health, prevent and cure disease, and how to detect and what to do in contagious diseases, was timely and of great value. A feature connected with our June meeting, is the estimated yield of farm crops, which is followed by a report at the November meeting as to the actual yield. It is a satisfaction to know that the estimates in the several townships the past year were nearly, and in several instances exactly, in accord with the actual. A special meeting was held January 19th, 1886, at which a highly instructive address was made by P. F. Jacobs, editor of the *Poultry Keeper*, on "Outlines of poultry raising."

At the August meeting the subject of holding a fair and agricultural exhibit was discussed. Some of the members thought it in the line of our purpose and work as a Board of Agriculture to have an exhibit of stock, farm produce, &c., setting forth the results of farm work and, also, the most improved machines, displays of handiwork and merchandise, and to have at close of fair a joint stock sale. The enterprise was purely experimental and had several discouragements to meet and overcome in order to succeed. In the first place, the fair held here some twenty years ago seems not to have been conducted in such a way as to encourage men of means to invest in another enterprise of like character. Second, we did not have a stock company to secure us against financial failure. Third, the time to work up an interest in the movement was too short; about five weeks from the time it was decided to hold the fair was all the time the committee had to form and mature their plans. Fourth, want of experience. Fifth, and to crown all, when all was ready, stormy weather. But, notwithstanding all discouragements, the fair was a success. The public seemed to sympathize with us; even in the constant rain of the second day 1,500 persons were present, and on the next—which was not quite so wet overhead—6,000, and so on to the close of the exhibit. A number of the merchants of Trenton made fine displays of their goods. Machine men were there with their best machinery in great variety. The Messrs. Ribsam & Son and Wainwright, of Trenton, florists and nurserymen, made displays of flowers and plants, cut flowers and floral designs of superior excellence and artistic beauty. In needle and fancy work a varied and large display was made, as also in the culinary department, doing great credit to the lady exhibitors. A department of curiosities, ancient

and modern, attracted the lovers of relic treasures. The fruit display was second to none made in the State. It was grand in its magnitude, its variety, its perfection and beauty ; and the same may be said of the vegetables. A good exhibit of grain of different kinds and of poultry of various breeds was also made. A variety of corn, exhibited by P. V. D. Voorhees, of Hopewell, is worthy of mention ; he has been experimenting to produce a variety of shorter growth of stalks and superior productiveness, and has succeeded. This corn is well worthy of extended introduction.

For advertising the fair an edition of 5,000 copies of our premium list was published and widely distributed. Merchants, manufacturers, hotel proprietors and others advertised in this schedule liberally. There were printed 1,200 large posters, and advertisements were inserted in the local papers and in a number of others not published in the county. The Pennsylvania Railroad issued small posters and offered excursion rates to and from the fair, and liberal reductions on freight shipped for exhibition. It is but just to say that Thursday, the day our friends would have availed themselves of excursion rates, was stormy throughout. The Chairman of our Board of Directors, who was not enthusiastic in the movement to hold a fair, made a report to a meeting of the Board held January 19th, of which the following is an extract: "Situated as we are, the presumption has long been maintained that we were more of a manufacturing and mechanical community rather than agricultural. Consequently grave doubts have taken possession of the minds of many whether an agricultural exhibit could be successfully held. Everything in this line being new and experimental, no permanent basis of estimates could be obtained, all must depend upon the committee having the matter in charge, and the work must be entered into with that indefatigable zeal, assiduity and practical application so requisite to success. More than your Executive Committee dared to hope for has been realized. The whole community have declared themselves satisfied with the exhibit and all the arrangements connected therewith in all the departments, so much so that we feel constrained to congratulate the organization on the great ends so obtained."

We do not wish to burden your report with every detail of the fair. A brief statement of the entries in the several departments is given by the Recording Secretary, J. M. Dalrymple, as follows :

Department.	No. of head.
A. Horses	82
B. Cattle.....	30
C. Sheep and swine	18
	No. of entries.
D. Poultry and fur-bearing pets.....	60
E. Fruits.....	289
F. Vegetables.....	202
G. Grain, seeds and flour.....	188
H. Flowers and plants.....	39
I. Farming implements and machinery.....	31
I. Domestic implements.....	159
J. Bread, cake, preserves and dairy products.....	89
K. Fancy work, needle work, &c.....	256
Miscellaneous.....	50

Financially, we ended the fair as we began it. We have no debt, which is more, perhaps, than the managers of some more pretentious exhibitions can say. To the citizens of Trenton, who added attractions to the grounds by the mercantile, manufacturing, mechanical and floral displays made by them; to the press, which indorsed and advertised the fair; to the Pennsylvania Railroad Company, for reduced rates, and to all who, in any way, aided the enterprise, we extend our sincere thanks.

A summary of the crop reports from the townships is: Yield compared to last year—Corn, 100 to 130; yield, 40 to 65 bushels per acre; price, December 1st, 40 and 45 cents. Oats, 70 to 125; yield per acre, 30 to 40 bushels; price, 32 and 35 cents. Wheat, 33 to 75; yield per acre, 10 to 12 bushels; price, 95 cents and \$1.00.

Potatoes, all the way from 50 to 100; yield per acre, 50 to 100 barrels; price, \$1.25 to \$1.75 per barrel.

Cabbages, 75 to 200; yield per acre, 2,000 to 4,000; price, \$3.50 to \$5.00 per hundred.

Apples, 50 to 150; yield, 10 to 50 barrels; price, \$1.25 to \$2.00 per barrel.

Pears, 100 to 200; yield, 100 to 250 bushels.

Peaches, 40 to 120; yield, 150 to 200 baskets per acre; price, 50 to 75 cents per basket.

Grapes, 100 to 150; price, 2 to 5 cents per pound.

Strawberries, 25 to 100; yield per acre, 1,000 to 1,500 quarts; price per quart, 8 to 10 cents.

quarts ; price, 8 to 12 cents.

Timothy hay—yield from 1 ton to $1\frac{1}{2}$ tons per acre ; price, \$16 to \$20 per ton.

Clover hay—yield from $\frac{1}{2}$ ton to $1\frac{1}{2}$ tons per acre. The largest yield of corn per acre is in Ewing and Lawrence—65 bushels per acre. The highest oat yield is in South Hopewell—40 bushels per acre. The highest wheat yield, Princeton, Hamilton, Ewing and Lawrence—12 bushels per acre. The other townships are 10 bushels per acre. The highest potato yield is in Lawrence—300 bushels per acre. In peaches and some other fruits Hopewell leads ; in the small fruits, Hamilton.

Stock is in good condition throughout the county and there is no prevailing disease among them.

What woods we have remaining—a remnant only of that which was the pride of our fathers—is being cut off more and more each succeeding year, and there seems to be no provisions made for the years to come. If the State does not, farmers should, devise and put in operation some plan looking to a future supply of timber for farm purposes at best. And there are corners, sterile knolls and strips of land which might be used for protecting other crops, that might be utilized with chestnut, shellbark and other nut-bearing trees (supplied in variety by J. T. Lovett, Little Silver, N. J.,) and locusts, which would soon be of value in nut-bearing, besides prospectively for timber ; and would retain a supply of moisture to the land and afford shelter to the birds, which are so much needed in destroying the increasing hordes of insects.

TOWNSHIPS.

*The yield is given as compared with 1884. †The number of acres under cultivation. ‡The price, December 1st.

The number of acres under cultivation.

*The yield is given as compared with 1884.

The price, December 1st.

CROP REPORTS—Continued.

*Tons per acre.

MIDDLESEX COUNTY.

MIDDLESEX COUNTY BOARD OF AGRICULTURE.

OFFICERS FOR THE YEAR 1886.

President.....
Vice President.....SAMUEL BLISH..... New Brunswick.
Secretary.....J. M. WHITE.....New Brunswick.
Treasurer.....C. E. D. PHELPS.....New Brunswick.

BOARD OF DIRECTORS.

A. D. NEWELL,	J. G. CORTELYOU,	E. FARMER,
GEO. W. DEVOR,	GEO. H. COOK,	MATTHEW SUYDAM.

DIRECTORS IN STATE BOARD.

D. C. LEWIS (two years).....Cranbury.
J. M. WHITE (one year).....New Brunswick.

SOCIETY REPORT FOR 1885.

BY J. M. WHITE.

This society, until November 4th, 1885, was known as the Middlesex Farmers' Club, when it resolved itself into a County Board and elected the above-named officers. During the year from September to April the Society has met monthly to discuss various subjects of interest to agriculturists, but there has not been so much interest manifested as could be wished for, yet as a whole there seems to be advancement in the right direction, and farmers are yearly making it more of a study how to fertilize best with the least expense, and to produce the largest crops with the least labor and outlay consistent with good cultivation, and in all parts of our county we find the farms better tilled and producing finer crops than formerly.

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The past season has not been particularly a propitious one for the agriculturist, as some crops have been light, and other crops high in price; yet, all things considered, the farmer has been amply remunerated.

Corn has been an unusually good crop, probably 20 per cent above the average of former years, the quantity and quality both being good. The yield per acre has been probably on an average from 40 to 50 bushels per acre, and the price about 45 cents per bushel.

The wheat crop was badly killed in February and March, and would not average over half a crop, and yet the price on June 1 was not over one dollar per bushel.

Oats were usually good in quality, and the quantity was about the average, the yield per acre being usually about 35 bushels, in some instances double that amount is reported. Mr. Janney reports a field of 12 acres yellow oats as producing $882\frac{1}{2}$ to $73\frac{1}{2}$ bushels per acre. These oats succeeded corn and clover which had been well manured, but the oats received no manure.

More potatoes were planted than usual, and the crop in some localities was good, while in others it was light but generally free from disease. The average yield per acre was probably about 100 barrels. Some cases were far above this, one of 6 acres producing 900 or 150 barrels per acre. Price has not been high, from \$1.75 per barrel.

The cabbage crop was generally good and sold at prices averaging about \$5 per 100 heads; an acre usually giving from 2,000 to 5,000 heads.

Apples were about three-fourths of a crop, of good quality and prices from \$1.25 to \$1.75 per barrel.

Pears were abundant, of not the best quality and prices were about averaging about 50 cents per bushel.

Peaches were about two-thirds a crop, of medium quality and sold on an average of about 75 cents per bushel.

Grapes were very abundant, of good quality, and sold from 6 to 8 cents per pound.

Strawberries were not more than half a crop and not very early, but sold for 50 cents per bushel.

to 12 cents per quart. This crop was greatly injured by late frosts in spring.

Blackberries were a very light crop, bringing about 12 cents per quart.

Raspberries were an average crop and sold for good prices, averaging about 10 cents per quart.

The hay crop was unusually light, not being over half a crop, but sold for good prices, from \$16 to \$25 per ton.

Almost all kinds of vegetables have been plentiful and of good quality.

There are some industries in this county, such as milk production, &c., of which I have not been able to gather sufficient facts to report, owing to the limited time we have had since the organization of our Board. Hoping to be able to report more fully in the future, we respectfully submit the foregoing.

MONMOUTH COUNTY.

MONMOUTH COUNTY BOARD OF AGRICULTURE.

OFFICERS FOR THE YEAR 1886.

<i>President</i>	JOHN STATESIE.....	Colts Neck.
<i>Vice-President</i>	JOHN H. DENISE.....	Freehold.
<i>Treasurer</i>	JOHN H. WYCKOFF.....	Marlboro.
<i>Secretary</i>	D. D. DENISE.....	Freehold.

BOARD OF DIRECTORS.

D. A. STATESIE.....	Marlboro.
D. A. VANDEVEER.....	Manalapan.
EDWARD T. BEEKMAN.....	Middletown.
CHARLES M. BRUERE.....	Upper Freehold.
LIVINGSTON DUBOIS	Manalapan.

DELEGATES TO STATE BOARD.

D. D. DENISE	Freehold.
D. A. VANDEVEER	Manalapan.

MONMOUTH COUNTY CROP REPORT.

BY D. D. DENISE.

The past year has not been a very prosperous one for those who devote their attention to agriculture, though crops are fair but prices very low; some selling less than cost of production. The farmer, as well as the country, needs diversification of industry, and greater economy in production; he needs to produce at less cost than hitherto, and to adapt production more nearly to the demands of the home market, which is fast increasing in our State, and especially in our county; and what we need is to bring a higher intelligence to its aid, and make each acre produce far more than before. The following is a condensed statement of crop reports the past year, made up from reports of farmers from the various townships. The acreage of

(835)

wheat was about the same as last year, while the crop was far below, which we attribute to being winter-killed. While some fields have yielded from 25 to 30 bushels per acre, some were plowed up in the spring, making an average of 13 bushels per acre. Price, December 1st, \$1.00 per bushel. John H. Denise, of Freehold, reports from five acres of Finley variety wheat, sowed October 1st, 1884, 500 pounds of phosphate drilled in with wheat, sowed $1\frac{1}{2}$ bushels per acre—217 bushels and 15 pounds; an average of 43 bushels and 27 pounds per acre. Sowed about April 20th, 1885, 200 pounds of nitrate of soda per acre, which he thinks increased the yield from 10 to 15 bushels per acre.

The acreage of rye larger than last year, and the crop good, yielding higher than 40 bushels per acre; the average 18 bushels. Joseph Dubois, of Manalapan, reports from 10 acres, 385 bushels; an average of $38\frac{1}{2}$ bushels per acre.

John W. Herbert, of Marlboro, reports from $5\frac{54}{100}$ acres, 246 bushels of rye, an average of 44 bushels per acre, and 11 tons and 841 pounds of straw. The rye and straw netted \$316.28, an average \$60.00 per acre. Price, December 1st, 61 cents per bushel.

The yield of oats was a good average crop, though there are but few grown in this county.

Corn was an extraordinary crop, probably the largest ever harvested in the county on the same number of acres. I have had several reports of fields yielding from 85 to 95 bushels per acre.

John H. Denise presents the following: Corn planted on an old meadow well underdrained; had laid in sod for four years and received in that time two applications of Squankum marl; after plowing, 50 bushels per acre of slaked lime applied, being thoroughly worked in the soil with wheel harrow; corn planted 20th May, in hills of 4 feet distant; variety, gourd seed, white; handful of fertilizer to 3 hills, covered with soil before planting seed (this not recommended for high land, but is well worthy of a trial on low lands), hastening the corn out of the way of the weeds and birds; farmed with Planet, Jr., cultivator, keeping land as level as possible; yield of best acre, 9,407 pounds— $125\frac{1}{2}$ bushels, at 75 cents per bushel; yield on 5 acres, 42,160 pounds—112 bushels and 32 pounds per acre; yield of a trial plot of 5 acres of heavy clay soil, applying at time of planting, 500 pounds phosphate per acre, and 150 pounds nitrate of soda per acre when corn was 2 feet high, half of the plot covered with stable

the mill, nat cultivation; made a very large growth until injured by a heavy wind; yield 95 bushels per acre; price, December 1st, 45 cents per bushel.

The acreage of hay 10 per cent. larger than last year, but crop light, owing to lack of sufficient rain. Average of clover, $1\frac{1}{2}$ tons; timothy, 1 ton per acre. C. W. Hendrickson, of Freehold, reports from 5 acres of clover, 27,610 pounds of hay, an average of 2 tons 1,520 pounds per acre. Howard Ely, from Holmdel, 6 tons from 2 acres. Average price, December 1st, \$20 per ton.

Potatoes, a crop extensively grown in this county, was not up to the average of last year; about 15 per cent. less.

The average made up from the different reports, 52 barrels per acre. W. S. Combs, of Freehold, presents the following: Number of acres, 20; varieties, Mammoth Pearl, Queen of the Valley, American Giant, Magnum Bonum and Beauty of Hebron; total yield, 6,545 bushels; average yield, $327\frac{1}{4}$ bushels per acre; average yield on eight acres, 385 bushels; largest yield on one acre, 409 bushels.

Thomas C. Ely, of Holmdel, reports from 8 acres 1,000 barrels, an average of 125 barrels per acre; average price, December 1st, \$1.30 per barrel.

The tomato crop at the beginning of ripening, which was two weeks earlier than former years, was very promising, but heavy rains soon came which blighted the vines and reduced the crop very much. The average price received by the growers at the canning factories was a little over \$50 per acre. G. W. Solomon reports from $2\frac{3}{10}$ acres grown by him, plants set $4\frac{1}{2} \times 4\frac{1}{2}$ feet, 1,200 pounds of phosphate per acre, 71,230 pounds, making $35\frac{3}{8}$ tons, an average of 15 tons per acre. L. Dubois reports from $\frac{1}{2}$ acre 15,312 pounds—7 tons 1,312 pounds. Price paid at factories, \$7 per ton.

Apples about two-thirds of a crop, with range of price from \$1 to \$1.50 per barrel; red apples selling the best for shipping demand. Isaac Daws reports from 30 acres, 2,270 barrels, which was about half of the yield of last year. Variety, mostly Smith Cider.

Pears very light crop; 30 per cent. compared with last year. Trees looking better, as there has been less blight among them.

Strawberry crop very light. Vines badly killed by cold winter.

Blackberries about two-thirds of a crop. Vines somewhat killed by the winter. John Morris, of Manalapan, reports from one acre sold 4,679 quarts, for which he received \$400.

Grapes very little grown for market. John Vanderver reports from 3 acres of Concord grapes, 19 tons.

Melons of various kinds were abundant and sold very low, not paying shipping expenses in many instances.

Considerable attention is given to the raising of poultry, and is considered to be profitable where carefully managed.

Swine-breeding is not a very prominent agricultural industry, only in Upper Freehold township, and it will be still less in the future. The hog cholera has prevailed to an alarming extent in some sections, and it is to be regretted that a pestilence so prevalent, and carrying disaster and financial loss to so many farmers (for many have lost their whole herds), has not been made a subject of more thorough investigation.

The production of milk is rapidly increasing, as there is a growing demand for it, and many are turning their attention in this channel.

Feeding of cattle for beef is decreasing, as there is but little profit, if any, directly.

REPORT BY EDWARD BODIE.

Of herd-registered cattle in Monmouth county, we have of Jerseys 16 herds, comprising 206 animals; Holsteins, 5 herds, in numbers 56; Shorthorns, 1 herd of 26 head, and 1 herd of Guernseys. Six of our breeders contributed to the public sales the past year, in New York City. J. V. N. Willis, of Marlboro, 21 animals sold for \$9,458; Milton Smock, Marlboro, 4 for \$1,175; D. Arthur Vanderveer, Freehold, 5 for \$1,165. Of private sale, Willis is credited in one lot of 8 calves, his own breeding, \$3,450; 1 cow, \$2,500. McDermott & Sutphin, 1 calf, \$500, and 3 yearlings, \$862. While most of our farmers are conservative in their views as regards thoroughbred cattle, it is to be regretted they do not see the necessity of a pure bull to head their herds. Those producing veal and beef should have a pure bull, either Shorthorn, Hereford or Holstein; for the dairy, a pure Jersey or Holstein. Of the Holsteins, for beef, we have had good specimens at our county fair of calves six months old weighing 600 pounds. For milk yield, D. Arthur Vanderveer, of Freehold, from 6 Jersey cows, sold, from August 1st to January 15th, 13,220 quarts of milk, at 4 cents per quart.

MONMOUTH COUNTY AGRICULTURAL SOCIETY.

OFFICERS FOR THE YEAR 1886.

<i>President</i>	HON. WILLIAM SPADER.....	Matawan.
<i>Vice Presidents</i>	{ Col. CHAS. D. HENDRICKSON.....	Middletown.
	{ JOHN H. DENISE.....	Freehold.
<i>Secretary</i>	JOHN T. ROSELL.....	Freehold.
<i>Treasurer</i>	CHAS. H. BUTCHER.....	Freehold.
<i>Manager of Horse Department</i> ..	GEO. F. WARD.....	Freehold.

MANAGERS.

HON. WILLIAM SPADER,	THOS. E. MORRIS,	GEO. F. WARD,
HON. N. S. RUE,	HON. S. B. OVIATT,	C. D. B. FORMAN,
HON. GEO. W. BROWN,	Col. C. D. HENDRICKSON,	JAS. H. BUTCHER,
L. F. CONOVER,	J. H. DENISE,	W. H. DAVIS,
JOHN W. PARKER,	HAL. ALLAIRE,	THEO. AUMACK,
EDWARD MARTIN,	CORNELIUS ACKERSON,	J. T. FIELDS.
JOHN V. N. WILLIS,	CHAS. H. BUTCHER,	

Annual Fair, September 7th, 8th and 9th.

In looking over the operations of the Society for the year ending January 1st, 1886, it is with a great deal of satisfaction we note the fact of the improvement in our exhibition, both as to the quality and number of exhibits, and it appears to us that in the future the Society is to occupy a prominent position in the rank of like societies in this or any other State; which our old county of Monmouth is certainly entitled to. The labors of the managers and officers have met with good results.

STATEMENT OF TREASURER.

RECEIPTS.

Loans	\$1,998 00
For entrance fees.....	1,218 00
For stands and ground rents.....	820 75
For gate money.....	3,252 51
For sundries.....	1,197 73
	<hr/>
	\$8,486 99

EXPENDITURES.

For permanent improvements.....	\$365 96
For current expenses (premiums, printing, &c.)	6,941 27
For account expenses former years	85 69
Balance in hand.....	69 07
	<hr/>
	\$8,486 99

Total indebtedness of Society, January 14th, 1886.... \$8,455 48

Not only the managers of the Society, but the stockholders, feel greatly encouraged with the outlook for the future. Knowing the interest taken in our exhibitions, we all feel that, can the fair of 1886 be favored with fair weather, the report of next year will be more interesting than for 1885.

There is some talk of changing the time of the annual fair from the second week in September to the last week of September or first week in October.

SALEM COUNTY.

**WEST JERSEY AGRICULTURAL AND HORTICUL-
TURAL ASSOCIATION.**

OFFICERS FOR THE YEAR 1886.

are interested in the horse, whether they be citizens or farmers, we think best to gratify their desire and enjoy their presence, giving to us ample funds to make the premium list on agricultural products sufficiently interesting to attract rivalry, thereby guaranteeing the real object of holding fairs.

The question is frequently asked, are the fairs of any benefit to agriculture? Compare the improvement in stock, grain, vegetables, poultry, fancy work and machinery, as we find it to-day, with that which the country could produce thirty years ago. A fair judgment and an honest decision will admit that the great improvement has been brought about by facilities offered by competition at our annual fairs.

As the greater part of our county is a heavy loam soil, the crops grown are wheat, corn, oats, hay and potatoes, while dairying is becoming a very important branch of our industry. Growing early lambs for the New York market is not without its profit, as some have already been sold and shipped from Woodstown, which, by the price paid, would require the consumer to pay about \$1 per pound, if the middle men receive a profit.

Our soil being well adapted to the growth of tomatoes, factories have been erected with sufficient capacity to place the county second, if not first, in the annual pack of counties in the United States.

The hog cholera has been prevalent in some parts of our county, and one dairy has been visited with pleuro-pneumonia.

We have no experimental crops to report. Grain of all kinds last year was very near an average, while potatoes were far above, and of good quality; the hay crop was short. I am satisfied, by observation and experience, the failure to grow crops might, in a great measure, be prevented. Protect the young grass as we would a field of grain, and the complaint will not be so general. The pasturing of the young plants leaves the roots exhausted and unprotected, with little energy to produce growth in a soil which becomes hard and lifeless when left in such condition.

SOMERSET COUNTY.

SOMERSET COUNTY AGRICULTURAL SOCIETY.

(Organized 1870.)

OFFICERS FOR THE YEAR 1886.

<i>President</i>	Col. A. S. TEN EYCK	Somerville.
<i>Vice-President</i>	CALVIN CORLE.	Neshanic.
<i>Treasurer</i>	L. R. VREDENBURG.....	Somerville.
<i>Secretary</i>	WILLIAM S. POTTER	Somerville.

DIRECTORS.

D. D. STELLE.....	Franklin Park.
H. S. LONG.....	Raritan.
JAMES P. MAJOR.....	Somerville.
JOHN R. LEWIS.....	Baskingridge.
JAMES CRAIG.....	Dunellen.
ALBERT VOORHEES ...	Millstone.
H. A. VANDERBECK.....	Lamington.
A. A. CORTLEYOU.....	Neshanic.
JACOB S. HOAGLAND.....	Harlingen.

Delegate to State Board..... ..WILLIAM S. POTTER.

SOCIETY AND CROP REPORT.

BY WILLIAM S. POTTER.

Annual fair, 1886, at Somerville, September 28th, 29th and 30th.
Number of stockholders, 600.

Receipts from fair, 1885.....	\$5,473 55
Premiums and expenses.....	3,840 15
Profits.....	\$1,633 40

This year we were favored with good weather and consequently good attendance. Exhibitions were all that we could expect in each department. An increased interest seems manifested every year.

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Our farmers throughout the county nearly all attend, and exchange views on modes of farming, use of fertilizers and the best kinds of grain to raise. Sometimes we hear expressed views on the political situation or candidates. With the best regulated fairs, politicians will sometimes get inside the enclosure, get the ear of the farmer, and thus detract his attention from the legitimate object in view when he came to the fair, viz.: to improve his mode of farming and make it more profitable. And, again, inside the ring, when he thinks he has his entire attention, he is not aware of the fact that the farmer is more interested to see whether the black, the gray, or the bay is coming out ahead in the race, than whether this or that particular candidate is to be elected.

Some plan must be devised by our agricultural societies to prevent the politicians from monopolizing our farmers during fairs. Why, even at Waverley, on what is called Political Hill, at the President's headquarters, a farmer can scarcely get a foothold to see the contests on the track, every inch of ground being filled with politicians and a slight sprinkling of the fair sex, friends of the politicians, not even wives of farmers.

I suppose it is thought by politicians, and, perhaps, by people of other professions, that a farmer has no use for speed, except a fast-walking horse. They are slightly in error as far as the farmers of Somerset are concerned. They not only admire style and beauty in a horse, but it is found that the roadster class is the most popular one, and when they get on the road towards the county seat they want to get there. It may be a note coming due at the bank, or some other farmer on the road who is attempting to precede him, in which case fast-walking horses don't fill the bill.

These matters are important to the farmer, and whether he is observing the many beautiful show horses inside the ring or the more speedy ones upon the track, he should not be interrupted by the selfish politician and have his mind diverted.

Our Society meets annually in February for election of officers.

We have been favored by Prof. Cook for several years, who gives an interesting and instructive lecture on farming. Our court house is usually filled. His subject this year is "The Experiment Station, and How it Can Aid Farmers."

The following is our crop report :

STRAWBERRIES.

Yield compared to last year.....	75 per cent.
Yield per acre.....	2,000 quarts.
Average price per quart received.....	12 cents.

BLACKBERRIES AND RASPBERRIES.

Yield compared to last year.....	100 per cent.
Average price per quart received	10 cents.

MISCELLANEOUS.

Yield of millet hay per acre (crop failure, 1885).....	3 tons.
Yield of clover hay per acre (crop failure, 1885).....	2 tons.
Yield of other hay per acre, timothy.....	1½ tons.

UNION COUNTY.

UNION COUNTY BOARD OF AGRICULTURE.

To the New Jersey State Board of Agriculture:

With feelings of friendship towards the State Board and brother farmers of the State, do we write this, our annual letter. One reason, no doubt, for our friendship is (if you will allow a little digression from statistics and practical farming) that we are mutually related to a stylish maiden, whose real worth we appreciate, notwithstanding the outside world sometimes speaks unkindly of her. A little description of her profile will enable you to recognize her at once, for you all know her. The Delaware river outlines the front of this virgin of the sea, Sussex county the forehead, the Blue Mountains the nose, Water Gap the mouth, Phillipsburg the breast, Trenton is the point of the waist, the Pennsylvania Railroad the waistband, South Jersey the overskirt, Cape May the heel of the foot (which has not as yet emerged from Delaware Bay), the small islands that fringe the coast the furbelows behind, Monmouth county and Sandy Hook the bustle, Middlesex and Union the back and shoulders, Essex and Passaic the back of the neck and head, while Bergen and Hudson counties are the hair, the Palisades representing the chignon, and Bergen Point the part loosely falling over the shoulders. Not to go too much into detail, pointing out other resemblances, let us consider that part called

UNION COUNTY.

Union county is about twelve miles square, divided into twelve townships and contains as many growing towns and villages. While not the largest county in the State, it compares favorably with others in healthfulness, productiveness of soil and beauty of landscape. In some other respects it is second to none. It offers a superior home market for all the products of the farm. The grade of the society,

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churches and schools is above the average. The communication with the outside world is excellent, especially New York City. The several railroads that pass through it bring every farm within one or two miles of a depot. These advantages make it desirable for a place of residence, and, one would suppose, if land could be bought cheap enough, a good locality for profitable farming.

The farms are mostly small, ranging from ten to one hundred acres. The soil is of a reddish or chocolate loam, naturally fertile, easily worked and well adapted for growing grass, grain, vegetables and fruit, all of which find a ready market in the village or town near by without the assistance of a middleman. Some of the farms are owned by men of means, who make improvements, keep fancy stock and raise good crops, not so much for profit as to gratify their agricultural taste. Near the railroads many of the land owners are more anxious to grow towns and cities than crops, and this is the reason why a passer-by on the train sees so much unfenced, uncultivated land. This new use to which our land is capable of being put is very attractive to many; while it, no doubt, has added to our population and the selling value our real estate, it has, nevertheless, had a tendency to demoralize farming. This neglected land is principally owned by two classes of persons.

SPECULATORS,

Who do not reside here, who add nothing to our prosperity, but, on the contrary, are letting our once best and finest farms go to rack and ruin. Most of them bought the property some years ago. They expected great things. They had the land mapped out and a copy filed away in the county clerk's office; possibly they may have been the means of one or more houses being built, for which we acknowledge thanks. But their day of usefulness is past. What shall we do with them? They will not sell as long as they can hold the property, unless the purchaser will make good the hopes they once entertained. Neither will they rent it in a shape or for a price that will pay a good, industrious man to cultivate it. As a consequence, the fences are carried off and the land lies idle, growing only noxious weeds, which spread their seeds over adjoining fields. The other class are

Who purchased a farm for "a home in the country." They are far preferable to the speculators. The most of them are very desirable citizens, and many of them bring considerable money into the county, make improvements, especially about the house and surroundings; but, inexperienced in farming themselves, and depending entirely on hired help, the conviction is forced upon them that farming for them don't pay; year after year less land is cultivated, new meadows are not seeded down, the fences are allowed to disappear, and field desolation is the result. Now we ask the question, Cannot something be done to help remedy this defect in our farming? The writer has in mind a half-dozen or more farms, once the best in the township of Linden, that have been owned by a speculator. He has added nothing to their value since he bought them, but has rented them to anybody and everybody until they have been cropped and skinned to death. Have not neighbors some rights in the matter? If a city has a right to release taxes on a factory in order to induce its location in their midst, would it not be proper, in our taxing, to discriminate in favor of him who keeps things up in good shape?

These neglected, unfenced lands are not only an eye-sore to the intelligent, tidy farmer, and the foul weeds that sap the soil a source of mischief in the neighborhood, but they are encouraging another evil which is a terror to the would-be cultivator of unfenced land,

TRAMP COWS.

In our cities, towns and villages are a lot of wide-awake foreigners, who own a small house on a lot possibly 25 x 100 feet. These people own from one to a dozen cows, the milk from which is sold in the neighborhood every day. Through the spring, summer and fall these cows are driven out to the suburbs on the unfenced lands and pastured. The small boy that accompanies them is usually saucy, defiant and does not hesitate to steal good picking wherever he can get it, and if the cows get into your fields and destroy your crops, which is not unlikely, the only point in the mind of the boy or owner of the cows is to avoid paying damages, and nine times out of ten they escape. Our protest is not because of sympathy for the dog-in-the-manger speculator, whose land is thus pastured; neither do we begrudge

the help which some poor, ambitious man may derive from the profits of the cows. But we object, and that most earnestly, to the principle which it encourages of compelling a man to fence out other people's cattle. The burden of fencing land is not light, as we all know, and to make it necessary for self-protection is an injustice. Much of our unfenced land would be cultivated was it not for fear of the crops being destroyed by these tramp cows. We are ready to indorse a simple, easily-understood, rigorous law that will make every farmer's barn-yard a pound and give every farmer police authority.

A SUGGESTION IN REGARD TO BIRDS.

Our useful birds are fast disappearing. Cannot the bird law, which is very good so far as it goes, be made more effective? Cannot a sentiment be awakened in the mind of the rising generation, which will lead them to protect instead of destroying these their friends? The State Board of Education have wisely set one day in the year for schools, to be observed as Arbor Day; would it not be well for them also to appoint one day in the year in the interest of birds? A part of the exercises to be compositions on the varieties of home birds and their utility; the sin of destroying their eggs, shooting or trapping them; and the State law read and explained in their midst. We will make one exception to what we have said in regard to birds. The sparrows have increased tenfold, and as to their utility, our voice is against them, and so will not object to the small boy being let loose on them.

FARM STOCK.

While raising stock is not a prominent feature in our agriculture, the here and there a farmer who raises a colt, calf or pig makes the total, if enumerated, quite large. There are probably ten brought into the county, however, for use or consumption to every one raised.

MILK.

The raising of milk for consumption in the adjacent towns and villages, is an important part of our farming; it stands next to hay and corn in importance. We estimate that there are 3,650 cows in the county; the daily product amounts to 22,000 quarts. The average

think is too low. The reason for the low price is because the freight from the back country is so cheap, farmers there with their larger farms and cheaper lands have the advantage. The practice with those who make a business of raising milk, is to buy native fresh cows with calves by their side, milk them three-fourths of the year and then sell or exchange them for others; if extra good, they keep them on for four or five years. Sowed corn, rye and clover is grown to feed green in summer with pasture; clover and cornstalks or ensilage in winter, with more or less mill-feed and brewers' grains. The cows are kept in stables in stanchions at night and during milking time. The principal inducements for farmers to raise milk, is that it furnishes ready money, it keeps and brings a large quantity of manure on the farm, and then it is an excuse for the farmer to obtain more service from the hired help, early and late at night; still it is a slavish life, very confining. The milkmen who buy and gather the milk are often exacting and fault-finding, and the loss on cows takes off a large slice of the profits.

POULTRY.

The poultry interest has increased within the last three or four years. Quite a number of young men in the villages have put up extensive houses, and are raising eggs and spring chickens for market; some have incubators and report good success in hatching eggs. Most every farmer also keeps from 50 to 100 fowls, so that the total amounts to considerable. But few ducks, geese or turkeys are kept, and there are not many professional breeders of fancy poultry. We have visited several yards, and find the arrangements of houses, methods of feeding, &c., very similar. Some have one house and one-quarter acre of land, others have four or five houses and several acres devoted entirely to chicken purposes. The houses run east and west, are generally 12 feet wide by 100 feet long, one story, closely boarded and lined with paper; along the north side an alley gives access to each pen, which is 9 by 12 feet inside, with an extended yard outside enclosed with wire netting. Everything is made convenient for the fowls and the one that cares for them. A variety of food is given—wheat, corn, scraps of meat, oyster shells, warm quarters and green food in winter, plenty of pure air and water, and cleanliness in the houses, &c. The Leghorns are favorites for

eggs; the Plymouth Rocks, or light-colored mongrels, for meat. They all appear to have more faith in good care and food than in the breed. Among those who have been particularly successful are: Mr. Frederick V. Greene, of Roselle, with 250 fowls; the average last year of eggs gathered from February 1st to July 1st was 125; the balance of the year averaged 50 daily; cost of keeping a hen, 6 cents a month; he sells to private customers in New York; average price, 35 cents. Mr. L. E. Price, of Roselle, reports having 249 fowls the 1st of December, 1884; total number of eggs for the year, 20,857; average price, 30 cents; total receipts for eggs and chickens, \$686.78; expenses, interest on money invested, &c., \$361.44; total profit \$325.34. Last winter the canker troubled him considerably, causing a loss of 60 fowls. With proper care and attention he thinks a profit of \$2.00 a year can be made from a fowl. He recommends for canker the use of one ounce of sulphuric acid in one-half gallon of water, given daily for two weeks; one-half gallon will answer for a flock of 75. Mr. W. Bonnel and brother, also of Roselle, each have between 200 and 300 fowls and are equally successful. But probably Mr. Charles R. Dean, of Roselle, is the largest and most expert raiser of eggs and chickens in this county. He does business in New York, but has an arrangement with a young man, Mr. Sidney Williams, who carries out his ideas. His soil is a gravelly loam; he has five houses, which, taken together, are between 400 and 500 feet long and 14 feet wide. They are closely boarded, lined with tarred paper, properly ventilated, and have every convenience for taking care of the fowls. There are large outside runs both on the north and south side of the building, the north side principally for summer use; the soil in the yards is frequently turned over to neutralize the poison to the hens from excessive manure. He suggested in addition to the regular care and food, surface drainage as important; avoid drafts on chickens while roosting; thinks wood buildings better than so much glass, as they hold the warmth better at night in winter. He keeps 1,200 fowls, mostly Leghorn and Plymouth Rock. His main object is eggs, which he sells in New York for 10 cents a dozen more than most of us receive. He averaged last year 140 eggs from each hen; average price per dozen, 41 cents. In September he kills off all unneeded roosters and two-year old hens. His conveniences are complete; his brooder for raising young chickens has good features; one idea of having it to turn on a pivot in the center, makes it easy to change its

position. Of breeders in fancy poultry, Mr. S. L. Headley has the most varieties and best in quality. He took first and second premiums at the State and Mt. Holly Fairs on W. C. Black Polish, White B. Polish fowls and chicks, G. S. Polish, Black Spanish and Houdans.

HAY.

Our soil is well adapted for growing hay, especially the southern half of the county. Double the number of acres of land is devoted to it of any other crop, and it is the one which principally yields to the farmer money to pay his bills. It is sold direct to the consumer by the load for 5 to 10 cents a hundred more than baled hay. It is generally sown by itself in the late summer or early fall on potato or oat stubble ground; sometimes in connection with quick-growing turnips. Top-dressing with rotted barn-yard manure is attended with satisfactory results. The crop last summer was about on an average with the year before, except in the Passaic Valley, where it is reported good. Neither in '84 or '85 was there over three-fourths of a crop. The present price for first quality timothy is \$23 per ton.

CORN.

Corn is second in importance; probably one-tenth of the land is planted in it. Worn-out meadows are generally plowed up for it. A method of planting pursued by many, is a little different from the old practice. After furrowing and planting in the usual way half a shovelful or forkful of barn-yard manure is put on and covering done with a small plow. Just before the corn comes through, a Thomas harrow or light triangular drag made of rails is drawn over the rows to scrape off the comb of the rows, leveling them and killing starting weeds. It saves labor. Coarser manure can be used. The corn, while growing, stands dry weather better, and the corn comes up fairly good. The crop last year was above the average; 25 per cent. better than the year before. All that is raised is consumed and much more. Mr. Tucker, of Linden, reports a yield of 105 bushels of shelled corn.

POTATOES.

This is an important crop, especially in Union township; more are probably raised here than in all the other townships in the county. The soil is light and well adapted. Newark and Elizabeth afford a market near by. With market gardeners it precedes cabbage, celery and ruta бага turnips. The Early Rose variety still stands at the head. A method practiced by some Union township farmers, where the soil is light, and who have a stock of barn-yard manure, is to spread broadcast and, while plowing under, plant every third furrow; just before the sprout comes up the ground is harrowed over well. Plow 20 paced lands, geeing about, plant the first furrow, placing the potato a little on the right side of the furrow in the loose soil, then go three times around, &c. Two planters can keep the plow going all the time.

Yield compared with '84.....	110
Yield per acre.....	170 bushels.
Number of acres compared with '84.....	100
Price per bushel.....	75 cents.

FRUIT AND OTHER VEGETABLES.

Most every farm has a small apple orchard, some pear and peach trees, grape vines, and some small fruits. Very few, however, make them a specialty. The apple crop last year was almost a failure. Peaches were a good crop on the mountain land in New Providence township. There are five or six orchards there, each containing as many acres. The very late varieties are grown, and find a ready sale at good prices in the near-by towns. There are also a few small vineyards, patches of blackberries, raspberries, currants, and strawberries, but only to supply the home market. Most of the vegetables raised for market are grown in Union township. The crops raised are principally potatoes, sweet corn, tomatoes, cabbage, celery, and ruta бага turnips. Some tomatoes are grown under contract for the canning factory of Earl Bros., in Union township.

FOREST TREES.

The preservation of our woods from fires in the fall and winter is a question of no small importance. Gunners, who not only kill our

Set fire to the dry leaves and dry rotten wood which lies on the ground, and thereby more or less ruining many acres of young, valuable timber. Mr. David Hand, of Scotch Plains, who owns considerable woodland, makes a good suggestion in telling his practice. In the fall, after the leaves have fallen, and a day or two after a rain, before the leaves have dried too much, burn the woods over under your supervision. The dampness in the ground and leaves prevent excessive heat and rapid spreading.

THE COUNTY BOARD.

The first of last year the Union County Farmers' Club, which has had an existence for eighteen years, and the County Board, organized the year before, united and complied with the requirements of the State law. During the year we have held eleven meetings for conference and discussion of farm topics, and one picnic. The latter was held in June, in Ogden Woodruff's grove, near Elizabeth, and was largely attended and very enjoyable. The display of strawberries was, as usual, large and very fine.

At our annual meeting for the election of officers, held the first Thursday in January, the following were elected: Dennis Long, of Union (P. O., Irvington), President; Dennis C. Crane, of Roselle, Secretary and Librarian, and Robert Woodruff, of Westfield, Treasurer. Board of Directors are Mr. E. P. Beebe, of Elizabeth; Joseph W. Cory, of Westfield; Moses O. Winans, of Linden; Ogden Woodruff, of Elizabeth, and Henry Cook, of Scotch Plains.

	Hay.	Corn.	Oats.	Rye.	Wheat.	Potatoes.	Cabbage.	Turnips.
Yield compared with 1884.	85	125	110	75	25	80	110	125
Yield per acre.	2,000	40 bu.	25 bu	20	10	140	2,500	200
Number of acres.	30,000	10,000	8,000	1,000	1,000	1,500	300	1,000
Price.	\$20	50 cts.	38	58	100	75	5	25

	Tomatoes.	Celery.	Apples.	Pears.	Peaches.	Grapes.	Blackberries.	Raspberries.
Yield compared with 1884.	110	.....	10	120	125	75	100	90
Yield per acre. ....	.....	.....	.....	.....	.....	.....	.....	.....
Number of acres.	300	.....	1,500	150	200	50	150	150
Price. ....	.....	.....	.....	.....	.....	.....	.....	.....

There is somewhere in the neighborhood of 120,000 acres in the county; 60,000 we estimate is improved land, devoted to the above crops. The other half is probably divided into woodland 30,000 acres; waste land out to commons and not cropped, but most of it pastured, 10,000 acres; 15,000 acres in salt meadow, and 5,000 acres in roads and land built on, towns and cities.

To represent counties in which the officers have not been reported, or where County Boards have not yet been organized, the Executive Committee have selected the following gentlemen :

Bergen county.....	HON. WM. WALTER PHELPS.....	Englewood.
Cape May county.....	HON. W. B. MILLER	Cape May.
Hudson county.....	JAMES STEVENS.....	Jersey City.
Morris county.....	ENOS. G. BUDD.....	Budd's Lake.
Ocean county.....	FRANK S. GASKILL.....	Marlboro.
Passaic county.....	GEORGE W. COLFAX.....	Pompton.
Sussex county.....	HON. JOHN A. MCBRIDE.....	Unionville.
Warren county.. ..	WM. SHIELDS.....	Washington.

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